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DISEASES OF THE SKIN

CROCKER

DISEASES OF THE SKIN

THEIR

DESCRIPTION, PATHOLOGY, DIAGNOSIS, AND TREATMENT

WITH

SPECIAL REFERENCE TO THE SKIN ERUPTIONS OF CHILDREN

AND

AN ANALYSIS OF FIFTEEN THOUSAND CASES OF SKIN DISEASE

BY

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THIRD EDITION, REVISED AND ENLARGED

WITH FOUR PLATES AND ONE HUNDRED AND TWELVE ILLUSTRATIONS

PHILADELPHIA

P. BLAKISTON'S SON & CO.

1012 WALNUT STREET

1905

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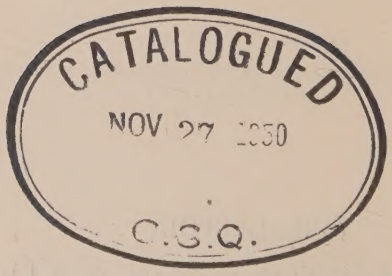

THE MERSHON COMPANY PRESS,
RAHWAY, N. J.

PREFACE TO THE THIRD EDITION

THE exigencies of practice and other engagements, as well as the enormous literature produced by numerous workers in dermatology in all civilized countries, have rendered the preparation of this edition a long and arduous task, and the Second Edition has been out of print for the last three years.

It has been my earnest endeavor to bring the work up to date. Many of the articles have been entirely rewritten, and all have been thoroughly revised, and often in great part recast; nevertheless the book has grown considerably, but as my aim has been to make it as clinically complete as possible, the growth has been almost entirely on this side. The original plan of the work has, however, been preserved, so that the student can without trouble at first confine his attention to the most important features of the commonest diseases, while he can use it as a work of reference as his practical knowledge increases (*vide* p. 31).

A few of the names of the diseases have been changed from the last edition, such as Dermatitis herpetiformis for Hydroa herpetiformis, Lichen acuminatus instead of Pityriasis rubra pilaris, etc.; but this has been almost entirely in the interests of uniformity of nomenclature, these being the names which have met with the most general acceptance. A very few other changes have been made for other reasons.

The following are among the new articles: Acrodermatitis perstans, Persistent balanitis, Cheilitis exfoliativa, Lichen annulatus, Erythema serpens and Erysipeloid, Erythema elevatum diutinum, "Gayle" in man, X-Ray dermatitis, Toxin Serum Eruptions, Bronzing of the Skin in Diabetes, Keratolysis exfoliativa congenita, Porokeratosis, Mal de Meleda, Lupus marginatus, Granuloma annulare, Granuloma inguinale tropicum, Granuloma pyogenicum, Sarcoid, Mortimer's Malady; Pseudoxanthoma elasticum, Leukæmia and Pseudo-leukæmia cutis,

Chloroma, Endothelioma capitis, Veld sore; Hydrocystoma, Milium congenitale, Acne keratosa, Acne necrotisans, Acne agminata, Folliclis, Alopecia seborrhoica, Alopecia cicatrisata, Ulerythema ophryogenes, Folliculitis decalvans, Lentigo senilis, Blastomycosis hominis, etc. For most of the above long list, which is not complete, the articles have been short, but there have been many others, such as Erythema scarlatiniforme recidivans, Parakeratosis variegata (Lichen variegatus), etc., which had only a brief mention in the previous edition, but have now had, on account of our increased experience and knowledge of them, to be expanded into comparatively important articles.

With the view of helping my co-workers, numerous references have been given, especially choosing those which best opened up the literature of the subject. References to colored illustrations of most forms of skin diseases have also been given, largely, as is natural, to my own Atlas; but where the particular form of disease was not illustrated there, or where there was an especially good plate in another atlas or article, attention has been drawn to it, so that the reader may be enabled to help himself to realize the description in the text. With this object also a colored plate of the principal syphilids has been introduced, as their diagnosis can be made from a sample of the eruption, better than is the case in most non-specific eruptions where distribution, generally, plays so important a part. Two plates have also been given of the Ringworm Fungi in accordance with the most modern views.

In conclusion, I have to thank Mr. George Pernet, not only for assisting me in reading the proofs and other help while the book has been passing through the press, but for cordial and indefatigable assistance in sifting the literature of the subject, in preparing the microscopical sections for the new illustrations, and for writing the section in the Appendix on the Staining of Micro-organisms. My thanks are also due to Mr. Harold Wilson, B. Sc., Head Dispenser at University College Hospital, for reading the proofs of the formulary at the end, to prevent pharmaceutical errors being passed over.

121 HARLEY STREET, *December 21, 1902.*

CORRIGENDA.

Page	565.	For Fig. 27, *read* Fig. 27A.
"	574.	Line 9 from bottom, for papillomatous, *read* papillomatosa.
"	640.	" 16 from bottom, for Stockholm, *read* Ulm.
"	640.	" 12 from bottom, for Schurigii, *read* Schurigius (Schurig).
"	900.	Note, for Santon, *read* Sauton,
"	904.	" " Syder, *read* Lyder.

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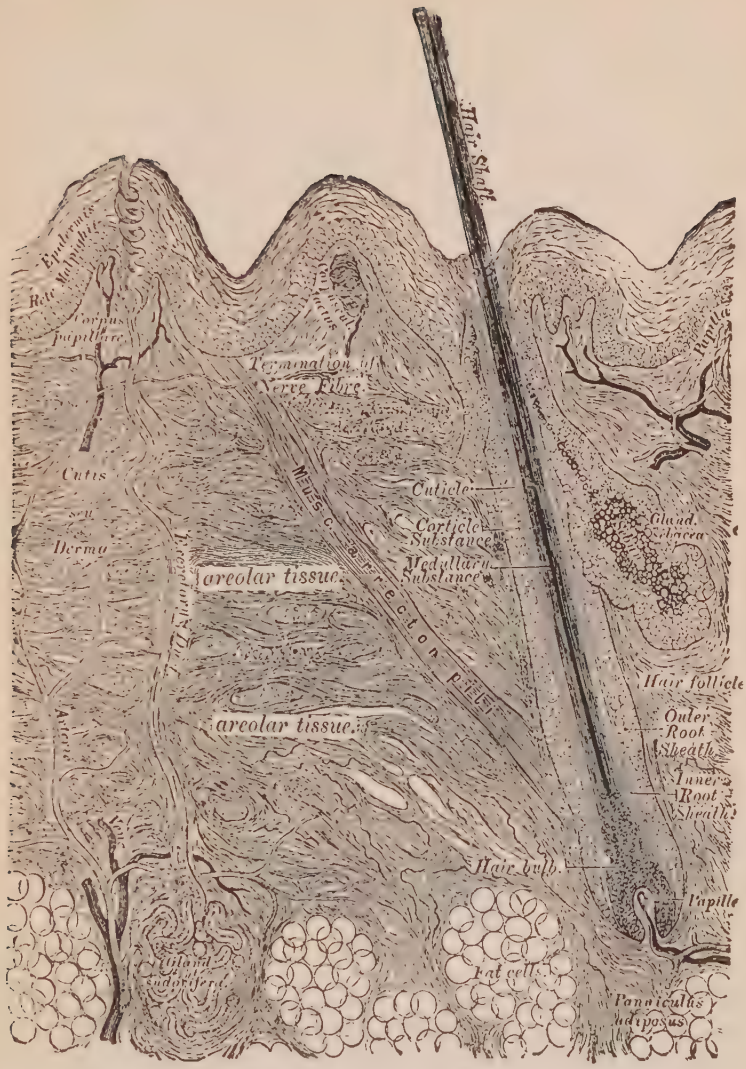


Fig. 1 is a general diagrammatic view of the skin, after Heitzmann. It shows three divisions of the skin, viz., the epidermis or epithelial part; the corium or true skin or fibrous part; and the subcutaneous tissue, panniculus adiposus or fat layer. In the upper part of the corium, called the papillary layer, are the skin papillæ containing vessels and nerve terminations and lymph spaces, while the middle and deep layers contain the vascular plexuses, the hair follicle, its muscle, and sebaceous glands, and the tortuous sweat duct which traverses it to reach the sweat coil situated in the fat layer.

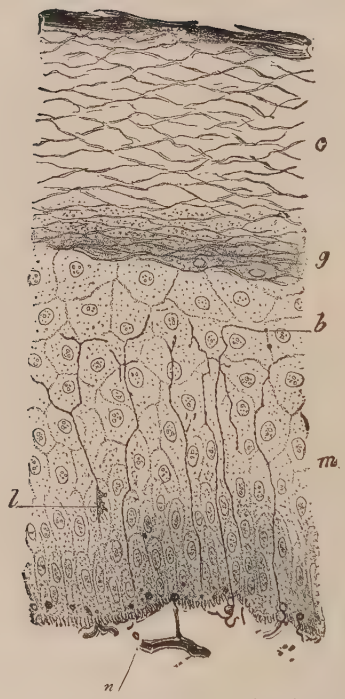


Fig. 2, from Ranvier's "Histology," shows the three principal divisions of the epidermis, viz., the horny layer (*c*), the granular layer (*g*), and the rete Malpighii, the mucous or prickle-cell layer (*m*). To these some add a fourth layer, or stratum lucidum, which lies just above *g*, but it is only a subdivision of the horny layer. The lowest row of cells of the rete also are cylindrical and placed perpendicularly, and are sometimes called the "palisade layer." This figure also shows the nerve terminations in the rete; *n* is the afferent nerve, *b* the terminal nerve bulbs, and *l* is a cell of Langerhans.

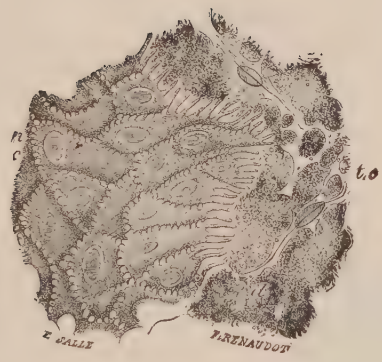
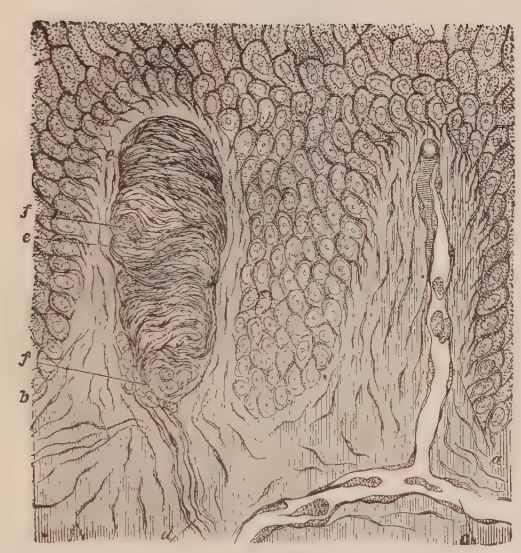


Fig. 3, from Ranvier's " Histology," shows the cells of the rete Malpighii more highly magnified in order to demonstrate their prickle-like processes, which, at their junction with those of the neighboring cells, leave small channels between the cells.

Fig. 4, also from Ranvier, shows the papillæ of the pulp of the finger after the epidermis has been detached by soaking in iodized serum: *P*, papillæ; *v*, blood-vessel ; *c*, papillary ridges. Other views of the papillæ are exhibited in Fig. 5 and Fig. 7.

Fig. 5, from Ranvier, shows the arrangement of the blood-vessels in the papillary layer of the corium: *c* is the epidermis traversed by a sweat channel, *s*; *d* is the corium; *p* points to the papillæ; and *v*, the arterial and venous capillaries of the papillæ, constituting the superficial or papillary plexus. This plexus also supplies the hair follicles and a "basket-like" plexus to the sebaceous glands. The drawing only shows a part of the other or deep horizontal plexus, which runs at the upper border of the subcutaneous tissue, and communicates with the superficial plexus by perpendicular vessels. The deep plexus supplies the sweat coils by means of a delicate plexus, as at *v s*, gives a single loop to the hair papilla and networks for the fat lobules.

Fig. 6.—Staining with gold of all the lymphatic channels of the papillary layer and epidermis of a slightly edematous skin (Unna).



Figs. 7 and 8 are to show the tactile and Pacinian corpuscles. Fig. 7 (Biesiadecki) shows *a*, a vascular, and *b*, a nervous papilla; *c* is a blood-vessel; *d*, a medullated nerve fiber inclosed in a thick nucleated sheath; *e* is a tactile corpuscle; *f*, transversely divided medullated nerve fibers.

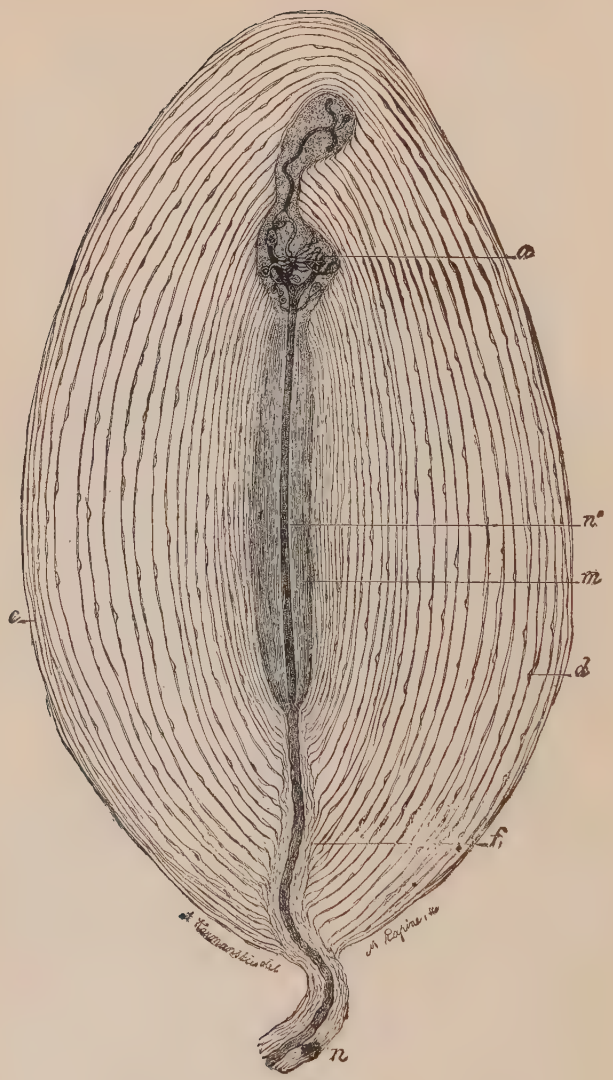


Fig. 8 (Ranvier), Pacinian corpuscle from the mesentery of a cat: *c*, capsules; *d*, endothelial lines which separate them; *n*, afferent nerve; *f*, funiculus; *m*, central club formation; *n'*, terminal fiber; *a*, point where one of the branches of the terminal fiber is divided into a great number of branches terminating in bulbs. The nerve terminations in the epidermis are shown in Fig. 2.

ABBREVIATIONS.

(Unless otherwise stated).

"Atlas" or "Author's Atlas" refers to my Folio Atlas of Diseases of the Skin, 1896.

"Brocq" refers to "Traitement des maladies de la peau," second edition (1892).

"Duhring" refers to "Diseases of the Skin," third edition. Only two parts of his new work, "Cutaneous Medicine," are published.

"Tilbury Fox" refers to his "Skin Diseases," third edition.

"Hebra" refers to the Sydenham Society's translation of Hebra and Kaposi's great work on diseases of the skin.

"Hutchinson" refers to "Lectures on Clinical Surgery," vol. i. ("On Certain Rare Diseases of the Skin.")

"Hutchinson's Archives" refers to the *Archives of Surgery*.

"International Atlas" refers to International Atlas of Rare Diseases of the Skin.

"Kaposi-Besnier" or "Kaposi Besnier-Doyon" refers to the second French edition (1891), from the third German edition of Kaposi's work.

"Kaposi" refers to American Translation, 1895.

"Leloir and Vidal" refers to the "Traité descriptif des maladies de la peau" of those authors, of which only three parts have appeared.

"Monatshefte" refers to the *Monatshefte für praktische Dermatologie*.

"Schwimmer" refers to "Die neuropathischen Dermatonosen."

"Ziemssen" refers to "Handbook of Skin Diseases" volume of Ziemssen's Cyclopædia of the Practice of Medicine.

"St. Louis Atlas," refers to Atlas of Diseases of the Skin from the wax models in the Saint Louis Hospital, Paris, or the English translation by Pringle.

INSTRUCTIONS TO THE STUDENT

THE portions that the student should read at first are the sections on semeiology, etiology, pathology, and diagnosis in the general part, while in the special part he should confine his attention to the most common diseases, such as he could see in a few attendances at an out-patient clinic, reading at first only the description of the typical features of each disease, the pathology without the anatomy, and the leading points in the diagnosis and treatment. The work is so arranged that he can readily do this, and the less important details can be subsequently studied as his clinical experience enlarges.

The diseases he will want at first are erythema intertrigo, erythema scarlatiniforme, erythema exudativum multiforme and its special variety nodosum, urticaria, eczema, impetigo contagiosa, boils and carbuncles, herpes varieties, pemphigus, psoriasis, lichen planus, purpura, ichthyosis, elephantiasis, molluscum contagiosum, lupus vulgaris, lupus erythematosus, scrofulodermia, syphilis, keloid, rodent ulcer, pruritus, miliaria, seborrhea, comedones, acne vulgaris, acne rosacea, alopecia areata, sycosis, the various forms of tinea trichophytina, tinea versicolor, scabies, and the varieties of pediculosis.

It is by attempting too much at first that the student frequently fails both in examinations and practice, a useless smattering being often the sole result of his misdirected efforts. On the other hand, he should not begin to learn diseases till he has mastered the semeiology, which is as necessary as the alphabet is as a preliminary to reading.

(*For abbreviations see preceding page.*)

DISEASES OF THE SKIN.

PART I.—GENERAL.

SEMEIOLOGY.

The symptoms of skin disease are objective and subjective, and they may be limited to the skin itself, or involve other parts, or even the whole organism.

In some instances the skin disease is the primary event, and the general disturbance secondary to it, as in cases of extensive and severe skin diseases, which lead to general vital depression, febrile disturbance, or marasmus. On the other hand,—and this is by far the larger class,—some internal derangement, functional or organic, as in disturbances of the alimentary canal, the uterus and ovaries, the kidneys, etc., leads directly or indirectly to the skin disorder. Every departure from health, therefore, whether in the skin or elsewhere, must be duly examined into, and its relative importance considered.

OBJECTIVE SYMPTOMS.

These comprise the elementary lesions of the skin, and are divided into primary and secondary. A clear appreciation of the exact characters of these lesions is essential for accurate diagnosis. And the omission to master this "A B C" knowledge of the subject makes dermatology a sealed book for a large proportion of the profession.

PRIMARY LESIONS.

Maculæ. *Synonyms.*—Spots; Macules; *Fr.*, Taches; *Ger.*, Flecke.

Definition.—Macules are discolorations level with the skin, of various sizes, shapes, and tints.

Thus, their size may be from a pin's point to as large as the hand or more; they may be round, oval, or irregular, but most are roundish; they may be well or ill defined; less frequently are altered in density or consistence; but their most striking and variable feature is their *color*, which is generally some shade of red, yellow, or brown. They may, or may not, disappear under pressure; may last a short or a long time, or even be permanent; and while some have subjective symptoms, most have none. They may also be primary or secondary.

In describing maculæ, regard must be paid to their size, color, shape, definition, consistence, and changeability under the influence of time, pressure, or other conditions, and their subjective symptoms and mode of production.

Their causes are very numerous. They may be due to:

1. Hyperemia, arterial or venous. This congestive kind of macula is red if arterial, bluish-red if venous, and always disappears under pressure, and when associated, as often happens, with some inflammatory swelling, is slightly raised above the surface, and although there is fluid exudation from the vessels, it is not more than can be soaked up by the cells and tissues of the epidermis and corium. The eruption, as a whole, is included under some form of **erythema**, or **roseola**, the latter term being applied to general **exanthemata**, as in that of typhus or syphilis. Another form is the red areola round inflammatory foci.

2. Extravasation of blood, and blood-coloring matter, into the skin gives rise to spots of various sizes and shapes. They are unaltered by pressure, are bright or purplish-red at first, but undergo bruise-like changes of color as absorption occurs. When in the shape of streaks they are called **vibices**; when punctate, **petechiæ**; when of larger size, **ecchymoses**. They may occur as complications of inflammatory lesions. When blood-coloring matter alone escapes, yellowish, orange, or café au lait colored patches are produced, which are generally due to partial mechanical venous stasis, and are common on the legs.

3. Under both congenital and acquired conditions the vessels of the skin may become permanently dilated, or new vessels formed. The **capillary nevus** is an example of the congenital form; stellate and other shaped **telangiectases** exemplify the acquired form. They may be accompanied by inflammatory or other lesions.

4. Changes in the pigmentation of the skin, either from excess or deficiency, may exhibit themselves in various forms of spots or patches, and may be congenital, as in moles, or acquired, as in lentigo or chloasma, or the flat form of xanthoma, in which there are other changes besides discoloration. They may also be secondary to other inflammatory changes, as in the stains left by lichen planus, most syphilids, etc. Diffuse pigmentations are not generally called maculæ, but are spoken of simply as discolorations of the skin, as in Addison's disease, malarial melanosis, argyria, bile staining, etc.

From loss of pigment arise the white spots known as vitiligo or leukoderma; white spots are also seen in morphea and general scleroderma, but here there are other, more important changes, besides the loss of pigment.

Tropho-neurotic conditions also are often associated with whiteness of the skin, as in maculæ atrophicæ, glossy skin, etc.; but in these cases there is diminished volume of the skin also.

Papulæ. *Synonyms.*—Papules; Pimples; *Fr.*, Papules; *Ger.*, Knötchen.

Definition.—Papules are small elevations of the skin, not exceeding a split pea in size, nor visibly containing fluid.

Papules are always small; a pin's point to a small pea represents their extremes in size. Their shape may be round or angular at the base, and in elevation convex or lenticular, acutely or bluntly conical, or even flat at the top. In color they are some shade of red, white, or yellow. They may be situated in the epidermis or in the corium, and connected with the papillæ, sweat, or sebaceous glands, or with the hair follicles. In describing them, therefore, regard must be paid to their size, shape, color, and anatomical position in the skin, and to their mode of production and subjective symptoms. The tendency among the careless and ignorant is to make the term "lichen" synonymous with a papular eruption; this should be carefully avoided, as it always leads to confusion, and when employed without a qualifying term, as in "lichen planus," is utterly meaningless. A still more self-deceiving term is "lichenoid," which is only a cloak for ignorance.

Papules, when due to inflammation, may be: acuminate, as in papular eczema, or flat and angular, as in lichen planus, and

these may have a central depression; others are caused by excessive cornification of the epidermic follicular lining, as in keratosis pilaris; or by contraction of the arrectores, as in "goose skin," in which the papules are colorless; and according to Auspitz, their permanent contraction produces prurigo papules. Papules may also be produced by the accumulation of sebum, as in milium and comedo; by hemorrhage into hair follicles, as in purpura papulosa; and in the peculiar process of xanthoma. Some inflammatory papules—*e. g.*, some papular syphilids—are scaly; others may go on to vesiculation or pustulation, as often happens in papular eczema. Papules vary much in duration, and may be acute, chronic, or permanent; the last are non-inflammatory, as in milium. They may or may not be attended by itching, which is sometimes very severe.

Nodulæ. *Synonyms.*—Nodules; Tubercles; *Fr.*, Tubercules; *Ger.*, Knoten.

Definition.—Nodules are solid elevations of the skin, from a split pea to a hazelnut in size.

Nodule is preferable to the older term "tubercle," as this may be confused with pathological tubercle.

The definition requires some qualification, as size is not the only criterion in all cases, though it is so as a rule. Thus, on the one hand, nodule is employed for the discrete lesions of lupus, tertiary syphilis, and leprosy, even when they are smaller than a split pea; and on the other, many neoplastic growths of small size are called tumors, which from their size alone might be called nodules, for authors are not strict in their discrimination between a tumor and a nodule. Hence it has been proposed to restrict the term to cellular infiltration (granuloma of Virchow) in a nodular form in the skin not larger than a hazelnut. Nodules of this character often go on by peripheral extension and coalescence to an **infiltration** in which the corium is permeated, or replaced, by granulation cells, in diffuse instead of nodular masses, slightly elevated as a rule, with sharply defined borders, and flattish surface. When of inflammatory origin the color is usually red or brownish-red, but small tumors may be of any color. Their size, shape, color, consistency, and course are the points to be specially noticed.

Tumores. *Synonyms.*—Tumors; *Fr.*, Tumeurs; *Ger.*, Geschwülste.

Definition.—New growths of all kinds, from a pea and upwards in size.

There is no limit to the size of tumors in an upward direction. The shape also is equally variable, though, unless compound, they are generally roundish. They are generally, but not always, well defined; may be sessile or pedunculated, with broad or narrow superficial or deep attachments. They are raised to a very variable extent, movable with the skin, or fixed to deeper parts, and may, or may not, be attended with itching, tenderness, or pain.

Their causes are very various. As they may take their origin from any part of the skin, its vessels or appendages, the color may or may not be altered. The chief points to be observed are, the size, shape, color, elevation, vascularity, mode and depth of attachment, mobility, subjective symptoms, and, where possible, the part of the skin in which they originate.

Vesiculæ. *Synonyms.*—Vesicles; *Fr.*, Vésicules; *Ger.*, Bläschen.

Definition.—Vesicles are elevations above the surface of the skin, from a pin's head to a hemp seed in size, with free contents of serous fluid.

Vesicles are produced by elevations of the upper layers of the epidermis by fluid, which may be forced upwards from below, either by mechanical or inflammatory pressure. They may arise directly on the surface, as in miliaria; or on the top of an inflammatory base, diffuse or papular, as in eczema. Their contents may be clear, turbid, or more or less blood-stained. They are generally tense, but the large ones may be flaccid; most of them rupture, as in eczema, but in many the contents are either absorbed or dry up without rupturing, as in sudamina or herpes. Their shape is, if discrete, roundish at the base and convex or acuminate at the top, or they may be pitted, as in the vaccine vesicle. They may be quite superficial, as in sudamina, or deep-seated, as in lymphangiectodes; consist of one or more chambers, as in herpes or varicella; be discrete or coalescent. They

are generally inflammatory, but are not so in sudamina or lymphangiectodes; are usually of short duration, and either rupture, or the contents dry up, become absorbed, enlarge into blebs, or pass into pustules. Anatomically, they may be situated between the horny layers, between the mucous and horny layers, or in the mucous layers, while in lymphangiectodes they are in the lymphatics of the corium. As a rule they tend to group in various ways, may remain discrete or coalesce, and being generally acutely inflammatory, are very often attended with burning and itching. The points to be observed are their size, color, contents, base, depth, mode of evolution, course, duration, the subjective symptoms, and, if the contents are evacuated, the condition of the skin beneath.

Bullæ. *Synonyms.*—Blebs; *Fr.*, Bulles; *Ger.*, Blasen.

Definition.—Blebs are vesicles which are as large as, or larger than, a pea.

Like vesicles, they are generally formed in the middle and deeper layers of the rete, and their roof is formed by the remaining layers of the epidermis, but sometimes the whole epidermis is elevated.

They vary in size, from a pea to a large hen's egg; the smaller and medium-sized bullæ are generally roundish or oval, but when very large, being often formed by several coalescing, they are irregular in outline. They have usually tense, strong walls, and therefore seldom rupture spontaneously, the contents drying up; but they may be flaccid, as in pemphigus foliaceus, and rupture early in their development. The contents are usually clear, straw-colored, consisting of serum, and therefore alkaline and albuminous, but sometimes there is sero-pus, pus, or blood. Bullæ, as a rule, have no areola unless they contain pus, rising abruptly from the healthy skin, but they are usually preceded by a transitory redness. Often no special sensation, except that of tension in the fully formed bulla, attends them; but occasionally, as in dermatitis herpetiformis, there is intense itching. Blebs are the prominent symptom in pemphigus, dermatitis herpetiformis, pompholyx, and herpes iris; are frequent in leprosy, syphilis, and erysipelas; and may be present occasionally in erythema exudativum, urticaria, measles, and in vesicular diseases

such as eczema, herpes, and varicella; in short, they may occur as an accident, so to speak, in almost any acute inflammatory affection of the skin.

The points to be observed are their size, shape, contents, duration, and, after rupture, the condition of the exposed surface.

Pustulæ. *Synonyms.*—Pustules; *Fr.*, Pustules; *Ger.*, Pusteln.

Definition.—Pustules differ from vesicles and blebs only in containing pus.

Pustules sometimes arise directly, but generally develop from vesicles or papules, and various intermediate conditions are therefore often simultaneously present. They are always of inflammatory origin, and unless blood-stained, of a yellowish color, and have, as a rule, a red areola, sometimes with induration, as in boils; most of them are round and convex, sometimes umbilicated, as in variola, but some are pointed, others flat and irregular, as in ecthyma; these, and indeed the majority, arise in the papillary layer, but they may be formed round the sebaceous glands, as in acne; round the hair follicles, as in sycosis; or deep in the corium, as in boils. Their course is generally acute and they usually rupture, the contents concreting into a firm crust, yellowish, greenish, or brownish if blood-stained; or they may dry up, and the crust is then less discolored, and friable. In either case a scar may be left if the process is deep enough. Pustules are often painful and tender, sometimes attended with burning, but seldom with itching. The points to be noted are their size, shape, color, mode of evolution, anatomical position, base, course, and sequelæ.

Pomphi. *Synonyms.*—Wheals; Urticæ; *Fr.*, Plaques ortiées; *Ger.*, Quaddeln.

Definition.—A wheal may be described as a circumscribed edema of the corium, producing a flat elevation of the epidermis at that point.

A wheal may be artificially produced by injecting a drop of water underneath the skin. Usually wheals are the result of angioneurotic irritation, external or internal, leading to the sudden outpouring of serum from the vessels; this is followed im-

mediately by a spasmodic contraction of the capillaries. On the spasm ceasing, the released capillaries take up the fluid again, and the wheal subsides. They are very variable in size, from a pin's head to a goose's egg, flatly convex as a rule, but the very large discrete ones are hemispherical; if large from coalescence only, they then form elevated patches. The outline is irregular, often determined by external causes, *e. g.*, scratching. The color is usually whitish in the center with a pink areola, or when the tension is not so great, rose-red all over, less frequently, with an anemic white areola; occasionally they are purple, from hemorrhage into them. They are evolved very rapidly, in a few minutes or even seconds, and as a rule last only a few hours or days, but are occasionally persistent. They may go on to the formation of bullæ, or leave behind them pigmentation, inflammatory papules, or even large lesions, as in urticaria pigmentosa. They are always attended with severe tingling or itching, are the characteristic lesions of urticaria, but may be produced as a local condition, *e. g.*, from the stinging-nettle or rhus poison, the bites of insects, etc. The points to be noted are, their size, color, mode of evolution, duration, sequelæ, and their local or constitutional origin.

SECONDARY LESIONS.

Squamæ. *Synonyms.*—Scales; *Fr.*, Squames; *Ger.*, Schuppen.

Definition.—Scales are dry, laminated exfoliations of the epidermis.

Scales may be, and usually are, the result of an inflammation, in which proliferation rather than exudation is the main feature. Or they may be due to preternatural dryness of the skin, as in seborrhea sicca and xeroderma. Or again, they may be the sequel of a previous acute hyperemia, as in erythematous eruptions, especially those of scarlatina and erysipelas, when the most superficial layers of the epidermis are thrown off.

They may be very small and branny, as after measles, or in pityriasis rosea, or in dandruff; or very large and thin, as in pityriasis rubra; they may be in a single layer, as in eczema squamosum; or adherent into crusts, as in psoriasis; silvery, white, or gray, as in the last disease; or dirty yellowish-looking,

as in many syphilids and ichthyosis. They are dry and brittle unless mixed with exudation. When due to inflammation they are usually on a more or less reddened base, unless in the form of desquamative sequela. Their quantity may be very small, or they may be shed literally in quarts per diem, as in severe pityriasis rubra. The points to be noted are their size, color, quantity, being separate or in crusts, their presence as a symptom or a sequela of the lesion.

Crustæ. *Synonyms.*—Crusts; *Fr.*, Croûtes; *Ger.*, Borken, Krusten.

Definition.—Crusts are irregular dried masses of exudation, or other effete products of disease.

Crusts vary much in appearance, according to their amount and origin. They may be adherent or loose, according to their age and the condition of the surface on which they rest. They may be thin and flat, or thick and craggy, according to the quantity and nature of the exudation from which they originate.

As a rule, crusts are the result of dried inflammatory exudation, consisting mainly of serum, pus, or blood mixed with epithelium.

They may, however, be chiefly composed of fat and epithelium, as in seborrhea, and are then greasy, light yellow when recent, dirty yellow or blackish when old; they are flat and adherent, but can easily be peeled off. Or they may consist of fungous elements, yellow and powdery, as in favus, or claylike, as in tinea imbricata. Inflammatory crusts of serous origin are light yellow, friable, and translucent, as in eczema and impetigo contagiosa in the serous stage, while the purulent crusts of the same diseases are thick, dark, and dirty-looking, and firmer in consistence. In ulcerating syphlids they may be in layers, very thick, firm, and greenish, while blood-crusts are of a dirty red, brownish, or blackish hue. All crusts follow in outline the excoriated surface on which they rest, and when the exudation is free and thin they are soon thrown or rubbed off, while, when it is thick they may get heaped up by the drying of successive layers as the ulcer extends, as in the limpet-shell crusts of rupia.

The points to be noted are their thickness, color, size, consistence, adherence, composition, and the condition of the surface beneath them, for which of course their removal is essential.

Excoriationes. *Synonyms.*—Excoriations; *Fr.*, Excoriations; *Ger.*, Hautabschürfungen.

Definition.—Excoriations are lesions in which, as a rule, the surface is denuded only as far as the stratum mucosum; they heal, therefore, without leaving scars. The shape, depth, and extent depend upon their mode of production, which, apart from superficial wounds from mechanical causes, is mostly by the nails in scratching; hence they are encountered most frequently and are most developed in pruritic diseases. The excoriations of the nails consist of puncta, which soon get scabbed over, from the decapitation of the follicular prominences of the skin; lines of scratching, superficial or comparatively deep, in which the epidermis is more or less torn up in places; these, when recent, are surrounded by an areola, which may be swollen into a wheal, and excoriated, soon becoming scab-topped papules developed secondarily from the constant irritation of the nails. Other lesions, directly or indirectly due to scratching, are ecthymatous pustules, eczematous patches, enlargement of the neighboring lymphatic glands, and when the pruritus is of long standing, thickening and pigmentation of the skin. All these symptoms go to make up the "**scratched skin**" in its highest development, but they are not all present except in severe and chronic cases, the number and extent depending upon the vigor of the scratching. Although this "scratched skin" is really a compound of various lesions besides excoriations, the group occurs so frequently that it may, as a whole, be considered to be a symptom of many diseases, such as prurigo, urticaria papulosa of infants, pediculi corporis, scabies, etc. The position, extent, and arrangement of the lesions are of diagnostic importance in a large number of instances.

Rhagades. *Synonyms.*—Fissures; *Fr.*, Fissures; *Ger.*, Rhagaden, Hautschrunden.

Definition.—Rhagades are linear cracks in the skin, whether due to injury or disease.

Fissures are produced in the parts where there is most movement, whenever, as the result of inflammation or other cause, the elasticity of the skin has been impaired. Their most frequent position is on the palmar and plantar surfaces of the hands and feet, the angles of the mouth and anus, and the flexures generally. They usually occur along the natural lines of flexion or other movement, as may be seen on the palms and soles in the so-called eczema rimosum, at the angles of the

mouth and anus in congenital syphilis, or in chronic eczema of the lips; but, of course, any other cause, such as local irritation, producing tension, with loss of elasticity, will produce them. They are painful on movement, especially when they extend to the corium.

Ulcera. *Synonyms.*—Ulcers; *Fr.*, Ulcères; *Ger.*, Geschwüre.

Definition.—Ulcers are losses of substance of the skin, extending into the corium and produced by disease.

The size is quite indefinite; the shape variable, the most common being round, but it may be reniform, irregular, or serpiginous. They may be deep or shallow, with steep or sloping sides and smooth or irregular base; the edges may be sharp or rounded, everted or undermined; the surface bleeds readily, is clean or sloughy, covered with pus or serum only; most crust over if left to themselves, but some keep up a continual discharge of varying amount, which may be offensive or not, and is usually grayish or yellowish, but sometimes sanious. Apart from injury, they are usually the result of lupus, syphilis, struma, lepra, malignant tumors, boils, or carbuncles. Varicose veins are a favoring condition for their occurrence on the lower extremities, where they are very common. They are generally painful, exquisitely tender, and their duration and course are very variable, depending upon a variety of conditions; their tendency, unless malignant or circumstances are unfavorable, is towards healing, but they always leave a permanent scar. The points to be noted are their position, size, shape, depth, edge, sides, floor, secretion, and course.

Cicatrices. *Synonyms.*—Scars; *Fr.*, Cicatrices; *Ger.*, Narben.

Definition.—Scars are connective tissue new formations replacing losses of substance, which extend as far as the corium. Whatever may be the cause of loss of substance, whether injury or disease, healing can only take place by cicatrization, in which the hairs, glands, and papillæ are absent, but there are vessels and nerves; the resulting scar varies according to the depth of the lesion.

The lesion need not, however, produce ulceration, as in some forms of lupus and syphilis, when the normal skin is infiltrated

and replaced by cells, which may undergo absorption, and the result is a scar, without any breach of surface; or when the skin is over-distended, as in lineæ albicantes; or when there is pressure, as in favus, in which the growth of the fungus digs into the skin. All these are examples of atrophic scarring, and the cicatrix is thin, white, glistening, and pliable. When the ulcer extends deeply into the tissues, as in burns, the scar will be contracted, thickened into bands, and adherent to subjacent tissues, and there are intermediate conditions. The scar may also be raised much above the surface, from increase of connective tissue, and form "hypertrophic scarring," or go on to the condition known as keloid. They are thus of all shapes, sizes, and thicknesses, raised or depressed, in bands, knots, lines, or spots, smooth or puckered. Their color is usually whitish and glistening when they are old, but they are red at first, and may remain so, or become purplish or pigmented. Their red or purple color may be due to dilated blood-vessels coursing over them. Scars are not often attended with subjective symptoms, but may itch or be painful, especially when a nerve twig is implicated in them.

The history of scars should always be carefully inquired into, as, when not due to injury, they are often of great diagnostic importance, the great majority being due to lupus, syphilis, or struma. The points to be noted are their position, size, shape, color, texture, and mobility.

Stains. Various eruptions leave stains behind them; these are generally produced by the escape of blood-coloring matter during the inflammatory process. Syphilids are especially noted for this, but many others also, as lichen planus, leave very dark pigmentation, while exudative erythemata, psoriasis, and many others, as a rule, leave only a red mark, which passes off in a week or two.

SPECIAL LESIONS.

There are a few lesions of special characters, which do not come under any of these heads, such as warts, horns, burrows of the acarus scabiei, etc., which will be explained in their special sections.

GENERAL SYMPTOMS.

The several lesions having been examined individually have now to be considered collectively. A single group, or separate area of disease, is "a patch," while the patches taken altogether constitute the eruption.

Distribution—Cleavage. The arrangement of the lesions in the patch, and the relations of the patches to each other, are governed to a certain extent by laws; and although we do not yet thoroughly understand them, some light has been thrown on the subject by the studies of C. Langer * and S. Swerchesky † with regard to what is known as the "cleavage" of the skin; while O. Simon ‡ has treated the whole subject.

When a round awl is thrust into the skin, Langer found that the skin was split into linear clefts in most parts, though in some a triangular or ragged hole was produced, *e. g.*, on the scalp, forehead, chin, and epigastrium. This he called "cleavage," and it was said to be complete in the first case and incomplete in the second; and in the difference depended, he found, upon the arrangement of the connective tissue bundles, which in complete cleavage ran mainly in one direction, and in incomplete cleavage ran pretty equally in different directions. Further, when the whole body was thus punctured in rows at equidistant intervals, the surface was mapped out into lines which indicated the general direction of the fibers in each region, and he found that these lines of cleavage ran, for the most part, obliquely to the axis of the trunk, sloping from the spine downwards and forwards, in the direction of the ribs at the upper two-thirds, but more horizontally lower down. In the limbs they were for the most part transverse to their longitudinal axis, and there were sub-variations in different regions, *e. g.*, circular girdles at the shoulder. The blood-vessels also were found by Tomsa to form circulatory planes where the cleavage was uniform, but where it was indefinite, the vascular trunks

* Langer, "Sitzungsberichte der kais. Akad. d. Wiss.," Wien, 1861, Bd. xliv. and xlv.

† *Annales de Syph. et Derm.*, July, 1871.

‡ "Die Localisation der Hautkrankheiten histologisch und klinisch bearbeitet," mit 5 Tafeln. Berlin, 1873.

were very tortuous, and ran vertically upwards, forming globular areas of distribution. This cleavage, or more directly the vascular distribution consequent on the cleavage, has been found

Fig. 9.—Diagram of the lines of cleavage of the skin (Langer).

to correspond in many respects with the arrangement of the groups of individual lesions. These may take various forms, of which circles, segments of circles, concentric circles, with or

without punctate centers, and ellipses are some of the most common, while connecting lines of eruption between the papules also run in the cleavage direction.

The **vaso-motor centers** which preside over different areas are, in my belief, an important element in governing the distribution of eruptions. One of the most important of these vascular areas is that of the head and neck down to just below the clavicle, the forearm, back of the hand, and the lower two-thirds of the upper arm on the extensor side, sloping down to the lower third on the inner side. This distribution is preserved in the great majority of cases of xeroderma pigmentosum, and it is usually accounted for by saying that it is the region exposed to the sun and air. But this is not strictly true; the lesions extend beyond the exposed part, and an exactly similar distribution may often be seen in eczema in adults of both sexes where there has not been any exposure either so low in the neck or so high in the arms. Another area is in the lower part of the back and upper part of the thighs. Many cases of extensive moles have this distribution, called sometimes the "bathing-drawers area." Counter irritation over the cervical and lumber enlargements, respectively, often exhibits a distinct influence on inflammatory eruptions in these regions. The part of the cheeks called by Hutchinson the "flush patch" is another such area. These are only examples, as the subject cannot be pursued further here. I have observed, however, that the area of anesthesia, after cord or single nerve injuries, often corresponds with the distribution of inflammatory and other eruptions, and both neurology and dermatology might give to each other much assistance by the further study of these relationships. Dr. H. Head's diagrams of the areas of distribution of herpes zoster should also be studied.

Eruptions may be symmetrical or unsymmetrical, with regard to the two halves of the body; unilateral, especially when owning a direct nervous distribution, as in herpes zoster, some cases of morphea, ichthyosis hystrix, and some of the eruptions of anesthetic leprosy. Other terms that require explanation are "universal," which signifies, not only that every region is affected, but that there is no intervening healthy skin between the lesions, as in pityriasis rubra; while an eruption may be said to be "general" when every region is affected, while there are

some healthy areas, as in the worst cases of psoriasis. On the other hand, an eruption may be "localized" to one or two regions; it may be "aggregate," *i. e.*, crowded together; or "disseminate," *i. e.*, scattered irregularly over the body. Patches or lesions may also be "discrete," *i. e.*, separate; or they may be "confluent." If in circular patches, or segments of such circles, the eruption is called "circinate"; if in rings, "annulate"; or if two rings meet and coalesce they are always broken at the point of contact, and "gyrate" figures are produced, as may be seen in vegetable parasitic eruptions. When a disease creeps slowly at one border, clearing up at the older part, it is said to be "serpiginous," as in the "serpiginous ulceration" of tertiary syphilids; or if the border is very abrupt, it may be called "marginate," as in erythema marginatum; while sharply defined patches are called "circumscribed." Small lesions the size of a millet seed are called "miliary," and when the size and shape of a split pea, "lenticular." There are many other qualifying terms, but their meaning is obvious. Such are those relating to the "age" of the patient, *e. g.*, prurigo senilis; the "general color" of the rash, *e. g.*, erythema iris, or lichen ruber; the "special region" affected, *e. g.*, eczema palmare; the "age" of the rash, "acute," "chronic," "transitory."

Any others in less common use will be explained, if necessary, as encountered in the several diseases.

In this section, therefore, the points to be noted are the extent and general arrangement of the eruption, the shape and size of the patches, and the relation of the individual lesions to each other; their aggregation or otherwise, and the duration of the whole rash; its general course, and the age of the patient.

SUBJECTIVE SYMPTOMS.

Subjective symptoms may be present or absent, and of all grades of intensity. Pain, tenderness, heat, tingling, itching, and smarting are the symptoms often met with, chiefly in inflammatory disorders; and pain is the chief symptom in phlegmonous inflammations and new growths of malignant character. The most common symptom is itching, which may be very slight or severe, and may be due to the direct effect of the lesion, or re-

flexly neurotic, as in many forms of pruritus. Formication is a modification of pruritus, and the sensation of tingling is closely allied to it. Anesthesia or loss of sensibility, and hyperesthesia or exalted sensibility, are rarely met with in diseases of the skin. Hypertrophies, atrophies, hemorrhages, and benign new growths are seldom attended with subjective symptoms.

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ETIOLOGY.

The subject of the causes of cutaneous disease is a complex one and must be discussed under several heads.

A disease of the skin may be symptomatic or idiopathic. It may be so entirely symptomatic as not to require separate treatment apart from the general condition to which it is due, as in the exanthematic eruptions belonging to the acute specific diseases, such as scarlatina and measles, or the early eruptions of the chronic specific diseases, such as syphilis and leprosy, polymorphous erythema, the xanthoma of the diabetic, the eruptions of scurvy, etc., or, while it may be due to a general or local internal derangement, both the skin and the offending organ must be treated as in gouty eczema, dyspeptic acne, and the like. In idiopathic diseases the departure from health either originates in, and is confined in its effects to, the skin itself, or appears to be so, as not infrequently the real cause eludes our observation. This includes all local diseases, *e. g.*, many hypertrophies and atrophies, and those dependent on external causes generally.

The causes predisposing to or directly producing cutaneous disease may be classified into:

Hygienic conditions, general and personal, and the

Constitutional conditions, family and personal, to which the individual may be subjected.

GENERAL HYGIENIC CONDITIONS.

The general hygienic conditions are climate, soil, abode, and seasons.

Climate.—It is very difficult to show the exact influence of climate, and few are only a matter of temperature, as with it so many other conditions are changed, such as race, habits, soil, diet, etc.

Yaws, leprosy, one form of elephantiasis arabum, phagedena tropica, Delhi boil and its congeners, are mainly tropical; verru-

gas is a disease of Peru; pinta, of Central America; tinea imbricata, of Oceana; pellagra, mainly of Northern Italy.

Eczema is nearly always aggravated by sea air, and exposure to northeast winds will often determine an attack in a predisposed person; and indeed, even without exposure the patient can often recognize by his sensations a deleterious change of wind.

Soil.—With the exception of that due to malaria, and even that is only indirectly due to soil, little is known with regard to the influence of soil on skin disease; urticaria, herpes febrilis, and melanotic pigmentation are not infrequent in connection with ague, especially in severe forms. Less common are roseola, —a large macular erythema, either on the limbs only, or general, and sometimes hemorrhagic,—petechiæ, and other forms of purpura; while boils, carbuncles, and noma are occasionally met with.*

The Abode may be insanitary and close, and conduce to strumous affections; pemphigus neonatorum generally, and boils often, occur where the air is contaminated with sewer gas or other foul emanations, and in any case nutrition and vital resistance are lowered, and the occurrence of skin and other diseases favored.

Seasons.—These exercise considerable influence; thus, in the spring, erythema multiforme is particularly liable to occur or recur; while, on the supervention of warmer weather, hydroa æstivale and urticaria papulosa, which had been quiescent in the cold weather, begin to recrudesce; psoriasis also often becomes active in the spring. Prurigo varies; some cases being worse in summer, some in winter. Prickly heat is only a disease of very hot weather. In autumn erythema multiforme is only a little less common than in spring. In winter many diseases are aggravated, notably lupus, ichthyosis, eczema, and many other inflammatory diseases; while chilblains, pruritus hiemalis, and

* Brocq records a case of papulo-vesicular eruption on the nose of a lady which waxed and waned at periods corresponding with a double tertian ague. After resisting all his efforts for weeks it disappeared in a few days with quinine. The patient had never had distinct ague, but lived in a malarial country for several months in each year, and Brocq thinks, with Verneuil and Merklen, that there is a group of skin eruptions worthy of being called "Paludides."—Brocq, *Annales de Derm.*, vol. viii., 1896, p. 1.

Raynaud's disease are especially diseases of cold weather.* There is, moreover, a summer pruritus, which is less common than the winter form. There is also a set of † recurrent eruptions of variable clinical characters some of which recur in summer and some in winter, while occasionally they overlap.

Sudden alternations of heat and cold, and extremes of either, are fruitful exciting causes of a large number of eruptions, producing them either *de novo* or by recrudescence.

Personal hygiene includes many causes of disease, such as:

Occupation, which often plays an important part, chiefly in the production of what are called professional dermatoses; thus there is the large class of trade eczemas, such as baker's, grocer's, bricklayer's, barmaid's, and washerwoman's "itch," due either to handling powders or to always having the hands wet. Workers in chemical or dye factories, or with arsenic or bichromate of potash, are liable to dermititis in various forms, from the iritating influence of the materials in use. Callosities from hard manual labor are well known. Various sweat eruptions are seen in those exposed to heat and moisture, as in pianoforte-makers.

Clothing may be unsuitable, either in make or material, *e. g.*, badly made boots produce corns or blisters; tight bands produce chafing or excoriations; dyed stockings often excite papular and eczematous eruptions; flannel excites pruritus in some skins, and if worn too long without washing favors the development of tinea versicolor and seborrhea corporis.

Uncleanliness is a favoring rather than an exciting cause of cutaneous disease, especially for parasites, both vegetable and animal. On the other hand the constant stimulation of the skin by the too frequent use of soap, especially if not carefully made, is liable to excite eczematous eruptions. Washing without great care in drying is a frequent cause of chapping, and vapor baths may excite malaria. Where eczema exists it is nearly always aggravated by water, unless it is quite soft like rain or distilled water.

* "Cold as an Etiological Factor," Corlett, *Amer. Jour. Cut. Dis.*, vol. xii., 1894, November No., and *Monatsh.*, vol. xxiii., 1896, p. 531.

† "Winter and Summer Recurring Eruptions," by the author, *Brit. Jour. Derm.*, vol. xii., 1900, p. 39.

Food, improper in quality or quantity, is an important factor in the production of a large number of diseases. It may do this, if inadequate in quantity or quality, by lowering nutrition generally, or by its directly irritating effects on the gastro-intestinal mucous membranes. Or it may be of a quality which promotes fermentation in the alimentary substances in the stomach. As examples may be given the use of starchy food in young infants, which often remains undigested, and acts injuriously, both by lowering nutrition and acting as an irritant, especially when there is intestinal catarrh; the effect of taking food containing branny particles, such as brown bread, oatmeal, etc., on eczematous and urticarial patients; and the influence of beer, pastry, etc., in exciting fermentation. More direct is the gastric irritation produced by shell-fish, especially mussels, which excite violent urticaria in some people. Then again certain diseases are ascribed to food, as pellagra to the consumption of decomposed maize, leprosy to decomposed fish, but the latter theory is not generally accepted.

Medicines.—Many drugs produce erythematous and urticarial eruptions when taken internally, which are referred to in detail in the section on drug eruptions; and a few, like iodin and bromin, produce eruptions of a special character.

Irritants.—Many drugs, plants, and other substances, when brought into contact with the skin, excite inflammation in it. Cantharides, turpentine, mustard, croton oil, rhus toxicodendron, and arnica may be cited as examples. *Vide* Dermatitis venenata.

Scratching is only another form of external irritation; the lesions it produces have already been detailed under Excoriations. It is, however, only where the itching is very severe, as in that produced by scabies, pediculosis, or prurigo, that the worst effects of scratching are produced. In senile pruritus, for instance, the skin is rarely injured to any material extent.

Contagion is responsible for not a few skin diseases; animal and vegetable parasitic diseases, impetigo contagiosa, the exanthemata, early syphilids, glanders, and malignant pustule, are some of the contagious or inoculable diseases.

RACE AND FAMILY CONSTITUTIONAL CONDITIONS.

Race.—Very little is known of the effect of race apart from endemic conditions, special customs, and personal habits of different races. Negroes are certainly more liable to yaws and keloid than the white races, and according to Morrison* of Baltimore, less liable to lupus and acne, and their skins are less sensitive to external irritation. The grave affection, "idiopathic multiple pigmented sarcoma," appears to occur chiefly among the Jews, and those mostly from Poland and Galicia; but this may be more a matter of habits and of local causes than a racial peculiarity. Leukoderma also is more common in colored races; but here again they are more exposed to the sun, and the contrast makes the affection more noticeable.

Heredity† exercises an important influence in the production of disease, but its influence is considered to have been formerly overrated. Thus the heredity of leprosy is now a disputed point. Some explain away its supposed heredity by assuming either that the disease is communicated by contagion from one member of the family to another, or that they are all subjected to the same environment, which is the real etiological factor. In other cases it is only a similar tissue proclivity that is transmitted, and if the pathogenic microbe, *e. g.*, the tubercle bacillus, is excluded, the supposed hereditary disease will be avoided. Even admittedly hereditary diseases vary much in the degree of proclivity induced thereby; in some, as syphilis, the disease, when in an active condition in the parent, is almost certain to be conveyed to the child; in others, as psoriasis and ichthyosis, the transmission is uncertain. If there are several children, some will probably be affected while others escape; on the other hand, in the majority of cases of these diseases there is no evidence of heredity. Eczema is probably not at all hereditary; but states predisposing to it, such as gout, feeble digestion, etc., are so. No doubt, too, some skins resent irritants more readily than others. Some diseases are only occasionally hereditary, such as

* "Personal Observations on Skin Diseases in the Negro." A paper read before the Amer. Derm. Soc Congress, 1888.

† "The Pedigree of Disease," by J. Hutchinson, London, 1884, may be consulted for a more complete account of the subject.

xanthoma, premature baldness, tylosis palmæ. In some instances of heredity there is a tendency to be limited to one sex in the family through several generations.

Family prevalence may or may not be associated with heredity; and here again the family liability is often confined to one sex. Of this, the rare affection xeroderma pigmentosum is an example—*e. g.*, in a family of eight boys and five girls, seven of the boys and no girls were affected, while no instance of heredity is known. Ichthyosis is another example in which there may or may not be heredity and family prevalence often limited to one sex.

PERSONAL CONSTITUTIONAL CONDITIONS.

Sex exercises a certain influence. This may be dependent upon anatomical peculiarities. Thus, it is obvious that sycosis can only occur in a male, and Paget's disease of the nipple in a female. On the other hand, it is not always so—*e. g.*, lupus erythematosus is much more common in women, and epithelioma is more common in men. The different habits of the two sexes no doubt also play a part. Thus, the minor form of acne rosacea is more common in women, from their greater liability to dyspepsia and constipation, owing to their sedentary habits, and partly, perhaps, to uterine derangement being another exciting cause; on the other hand, the worst forms are seen in men, from their more frequent intemperance and exposure to severe weather. The special conditions affecting women at different periods of life are described under the effects of age.*

Age.—The influence of age may be considered under two aspects. First, as regards merely the duration of the life of the individual; and, secondly, as regards epochs or events which occur at different periods. Speaking generally, in early life there is a greater tendency to the more acute forms of inflammation and to overgrowth; in old age, to lower forms of inflammation and to degenerative and atrophic diseases. In infancy, eruptions are more likely to take a pustular form, and from the ease with which the alimentary canal is deranged there is a greater liability to eczema or urticaria.

* Guibout, "Leçons cliniques sur les Maladies de la Peau," 1879, pp. 1000, divides skin diseases as they affect childhood, adult life, and old age

In the first three months of life congenital syphilis generally shows itself; at the end of the first year ichthyosis generally begins, though it may be earlier, and even be congenital. In the second year begins xeroderma pigmentosum. Psoriasis is very rare under three years old, and not common under five years. Ringworm of the head occurs in childhood only, for the most part, while tinea versicolor is hardly ever seen in childhood; on the other hand, vegetable parasitic diseases are rare after fifty. Acne rosacea begins to be prevalent about thirty, just when the tendency to acne vulgaris has ceased. Among animal parasitic diseases, pediculi corporis are rare in children, while pediculi capitis are almost universal among the children of the poor. Lupus vulgaris generally begins in childhood; lupus erythematosus rarely begins before the patient is grown up; impetigo contagiosa is more common in childhood, chiefly because children are more exposed to contagion. Cancerous affections are uncommon before middle age.

In connection with age there are certain events in life which often exert an influence; among these

Vaccination may be mentioned. Although not a natural process, its practice is so general as to be almost equivalent to it. The influence of vaccination occupies a large place in the public mind as an etiological factor in skin diseases, but only a very small one among medical men. That it is directly or indirectly responsible for some skin troubles cannot be doubted, and they are discussed under their appropriate headings; but the majority of cases ascribed to vaccination are only due to confusing the *post* with the *propter hoc*.

Dentition is another process in early life which is much overestimated as a cause of skin disease, even by the profession, by whom it is too often set up as a "bogy" for the ills of infancy. It has little if any direct influence, but there is doubtless a condition of unstable equilibrium, just before the eruption of a tooth, in which the child is easily upset, and during which any skin disease present, such as eczema or urticaria, is likely to be aggravated.

Puberty.—At puberty the glandular and hairy systems take on increased activity, and the line between physiological and pathological activity is liable to be overstepped. Hence disorders of the sebaceous glands arise, such as seborrhea, comedones, acne

vulgaris, bromidrosis, and hirsuties in girls are met with; at this time, too, many date their first onset of psoriasis and lupus, though both may begin earlier. Some diseases, such as ichthyosis and eczema, dating from early childhood, sometimes undergo amelioration.

The next four relate to women only.

Menstruation only produces eruptions when it lowers nutrition by the excess of discharge; but many eruptions, such as urticaria, acne vulgaris or rosacea, and eczema, are aggravated a few days before the menstrual flow occurs; while a few, such as herpes labialis, an erysipelas-like eruption of the face, erythema circinatum on the back of the hands, fugacious erythema elsewhere, and purpura, have been observed to recur at each period, without anything abnormal in the menses being present. In the absence of the catamenia, hematidrosis has been observed, being possibly a vicarious phenomenon.*

Pregnancy.—In connection with this state may be noticed the so-called herpes gestationis (see Dermatitis herpetiformis), and the fatal impetigo herpetiformis. Urticaria is not uncommon, and pruritus without any rash is often most troublesome, either general, or at the vulva only. Eczema is less frequent, chloasma is very common, and herpes febrilis is rather common. On the other hand, eczema or psoriasis may clear up during pregnancy, while most of the eruptions which occur during pregnancy clear up soon after parturition.

Lactation often exercises an influence, doubtless by lowering nutrition; thus women liable to psoriasis are very likely to have a fresh outbreak at that time, or an old attack aggravated. This is also true of eczema and other diseases dependent on lowered nutrition.

Climacteric.—At this time many diseases crop up or are aggravated, among which acne rosacea, seborrhea capitis with consequent baldness, and the ubiquitous eczema, may be specially mentioned.

Constitutional predisposition occurs apart from either heredity

*See also Danlos, "Thèse de Paris," 1874; Deligny, *Le Concours Médical*, April 14, 1888; a good abstract in *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vi. (1888), p. 315; *Brit. Med. Jour.*, March 3, 1879, quoting Schramm and W. Wagner; Grellety, translated in Wood's "Medical and Surgical Monographs."

or family prevalence, although often associated with those factors, and exercises more frequently an indirect rather than a direct influence. This may be seen in the liability of many persons to eczema on exposure to irritating influences, either external or internal, which would not affect the majority of people. Probably this is analogous to the liability many people show to catarrh of the mucous membranes, which is often to a great extent restricted to different regions in different people, *e. g.*, in and on the nasal mucous membranes, the pharynx, larynx, bronchi, or even stomach or intestines. How much is congenital, and how much acquired, is difficult to say in many cases; but I am a strong believer in the skin itself acquiring a bad habit, so to speak, and reacting to deleterious influences varying in different people, probably through the vaso-motor nerves. Chronic urticaria and allied conditions are examples of this, and many striking instances of the sensitiveness increasing by the repetition of the exciting cause are related amongst the drug and irritant eruptions.

It is certainly the case with many patients as regards eczema, especially when they have just got over an attack, and probably the liability to recurrence of erythema multiforme, hydroa, and of psoriasis, and to a less extent lichen planus, may be similarly explained. With regard to some of these diseases another possible explanation is that pathogenic microbes have periods of quiescence and activity, the latter stirred up sometimes, perhaps, by external influences.

Certainly the chance of permanent cure largely depends on the patient being able to avoid the exciting causes of the several diseases, for a considerable period. I am, however, no believer in the so-called herpetism of Bazin, or the dartrous diathesis of Hardy, except in the above very limited sense. Bazin's arthritic diathesis is so far true that gout and rheumatism have an undoubted predisposing influence in some diseases, *e. g.*, eczema, though I believe even this has been pushed too far by his school; and that many cases, *e. g.*, of scleroderma, pityriasis rubra, etc., are associated with rheumatism, because they own a predisposition to a common cause, viz., *chill*, and not because they stand in the relation of direct cause and effect. The greater liability of certain persons to parasitic diseases, which is admitted by most authors, is explicable in another way. The predisposition to

vegetable parasitic diseases lies probably in some anatomical peculiarity of the skin or hair follicles, or, as in tinea versicolor, in a greater tendency to perspire; while, with regard to animal parasites, probably some peculiar odor of the individual exercises an attraction on the insect.

Another point is that the same cause will, in one person, excite one kind of eruption, while in another a totally different form will be produced, though the same disease will generally be seen in the same individual under similar influences.

Internal Diseases.—In all cases of cutaneous disease defects in health, whether dependent upon disease in one part or in the whole of the organism, require careful investigation. Any lowering of the general vitality, either from defects in assimilation, defective nutrition—often the result of the first—or defective nerve power often shown in increased irritability, is an important predisposing factor of cutaneous as well as of other diseases.

The **digestion** should always claim our first attention. The diseases most directly connected with disturbance of the alimentary canal are urticaria, acne rosacea, and eczema; pruritus, both general and local, and all inflammatory diseases are liable to be aggravated by it. The effects of irritants from food and medicine have already been considered.

It is often difficult to separate functional disorder of the *liver* from that of the alimentary canal, as they are generally associated together more or less. The disease of the skin most directly associated with that of the liver is xanthoma, which in its generalized form, in an adult, is almost invariably associated with chronic jaundice. Severe pruritus is common, pruritus ani and urticaria being generally due to it, and urticaria is not infrequent in jaundice, or even in derangements much less severe than this.

Diseases of the Kidney.—Albuminuria is not a productive cause of skin disease; in my experience pruritus, urticaria, dermatitis herpetiformis, and as a consequence of scratching, ecthyma, and eczema in a few instances, are most directly associated, chiefly with the granular contracted kidney in the earlier stages, in which the general lowering of vitality also has a part, as well as the albuminuria. Defective kidney elimination is a probable

predisposing cause of senile eczema, even when there is no albuminuria, while the vulnerability of the senile degenerated skin to microbic invasion is another factor to be borne in mind.

In the more advanced stage of Bright's disease, especially of the granular form,* purpura, and, more important, a diffuse erythema, are not rarely observed. Huet of Holland first drew attention to uremic erythema, recording twenty-seven cases. After him, Bruzelius of Denmark, many French observers, Pye-Smith, Le Cronier Lancaster, and Thursfield have written about it.

The most characteristic eruption occurs in fingernail-sized erythematous discs, but it may be morbilliform, scarlatiniform, or patchy at first, but in any case it speedily becomes a diffuse red, superficial dermatitis, often universal, and generally followed by desquamation of the whole body surface in large flakes, leaving the skin thickened and red; or eczema may develop and vesicles, bullæ † or pustules may be produced. As a uremic phenomenon it is of grave significance, unless the uremia can be successfully combated for a time. In one of my cases this was accomplished, although uremic convulsions had occurred, and the patient made apparently a good recovery, and went about with only slight albuminuria. Subsequently she developed a diffuse and very extensive but not universal lupus erythematosus of the head, face, and trunk, but she lived for five months after the uremic erythema. Other cases of lupus erythematosus with albuminuria are on record.

For further details see Thiebierge's and Thursfield's paper on the whole subject.‡

Bullous eruptions in connection with uremia have been re-

* Colcott Fox reported a case in an old woman with granular kidneys in whom hemorrhagic erythema developed seven days before death, and went on to a universal severe purpura with melena and retinal hemorrhages.

† A. Barrs, *Brit. Jour. Derm.*, January, 1896, p. 9, relates the case of a uremic bullous eruption.

‡ "Des Relations des Dermatoses avec les Affections des Reins et l'Albuminurie," G. Thibierge, *Annales de Derm. et Syph*, vol. vi. (1885), pp. 424, 511. He gives extensive references up to date. Since then Chartier's "Thèse de Paris," 1889, Lancaster in *Clin. Soc. Trans.*, 1892, and Thursfield's paper in the *Medico-Chirurg. Trans.*, vol. lxxxiii. (1900), and the discussion, p. 235, and full biography, may be especially mentioned.

corded by Murchison, Duckworth, Barrs, and Persy. The last is the most conclusive of the relationship of the two diseases, as a bullous eruption on the lower limbs occurred on two occasions along with uremic convulsions and coma. Pityriasis rubra has also been observed in a few cases towards the end of Bright's disease (chiefly granular kidney), but there are many more in which Bright's disease has developed towards the end of pityriasis rubra.

Toxins in the blood acting on the vaso-motor centers is the most probable pathogenic theory of all these rashes.

In **diabetes**, Kaposi,* in a paper on this subject, found xerosis, pruritus, urticaria, acne cachecticorum, roseola and erythema, eczema (especially of the genitalia), balanitis and balanoposthitis, and vulvitis, boils and carbuncles, gangrene, perforating ulcer of the foot, and to these must be added the rare xanthoma diabeticorum, the so-called diabetic bronzing, although the diabetes is often a late symptom.

Other Urinary Constituents.—Of excess or deficiency of other urinary constituents no general statement of etiological value can be made.† Bulkley's paper, founded on 2000 pretty complete urinary analyses from 569 patients in his private practice, is chiefly remarkable for its negative aspects.

Only 26 patients showed albuminuria, 15 glycosuria. The most recent changes were, in their order of frequency, an excess of amorphous phosphates, oxalate of lime, uric acid, urates, triple phosphates. The variations in the quantity of urea, both in excess and deficiency, were less than might be anticipated, taking two per cent. as the normal average. In discussing the urine in eczema, psoriasis, acne, pruritus, etc., the same discrepancies were present, and no general deduction could be drawn beyond showing that "there are errors of nutrition and metabolism in many patients with skin diseases."

On the other hand, skin diseases may lead to disease of the kidneys; thus chronic universal dermatitis in any form is liable to lead to albuminuria just before the fatal termination; and

* *Wiener medicinische Presse*, No. 23, December, 1883. Abs. in *Annales de Derm. et Syph.*, vol. v. (1884), p. 28.

† "Imperfect or Deficient Urinary Excretion as observed in connection with certain Diseases of the Skin," by L. D. Bulkley. Reprint from *Amer. Derm. Trans.*, 1899.

Augagneur cites many cases confirming the opinion that suppurative dermatitis may induce nephritis. Temporary glycosuria is sometimes seen in association with eczema, but here they probably only own a common cause.

Diseases of the Respiratory System.—Although these can scarcely be considered causes of skin disease, spasmodic asthma is sufficiently often associated with cutaneous disease to show that there is a relation between them, but probably only that of common origin. Bulkley* gives a very complete *résumé* of our knowledge of this subject. Urticaria, eczema, and ichthyosis are the diseases associated with true spasmodic asthma in my experience. Gaskoin also connects psoriasis with it; but this is not in accordance with either Bulkley's or my own experience. Bulkley also, in 948 cases of acne, found 7 with asthma. This would scarcely imply more than coincidence. The occurrence of herpes febrilis with croupous pneumonia is due to the onset of the latter disease being generally ushered in with a well-marked rigor.

Diseases of the Circulation.—The most important is that sluggish circulation of the blood in the extremities, and perhaps also in the nose and ears, sometimes called the "chilblain circulation,"† in which the hands and feet are habitually cold, of a more or less livid redness, and not infrequently moist also. In this condition Richardson has shown that, while the heart is apparently acting strongly, the tension in the radial pulse may be so low that it is extremely difficult to get a sphygmographic tracing. This is not only a strongly predisposing cause for chilblains, and their occasional sequel, angiokeratoma, but also for lupus erythematosus, one form of which Hutchinson calls "chilblain lupus." He also relates three interesting cases in women with feeble circulation in which there were diffuse local congestions of the face, hands, and feet, with tendency to ulceration and general failure of nutrition. *Vide* Dermatitis recurrens hiemalis.

In *Peripheral Ischemia* the blood is unable to enter the capillaries, as seen in "dead or waxy fingers," and in Raynaud's disease; *obstruction* to the general circulation, such as occurs in

* *Brit. Med. Jour.*, November 21, 1885.

† An extreme instance is depicted in Plate 32 of Hutchinson's *Archives of Surgery*, vol. iii., 1891.

emphysema and mitral disease, may manifest itself in the skin as marked telangiectases on the face; while *local obstruction*, such as varicose veins, predisposes to eczema, ulcers of the lower limbs, pigmentation diffuse or in "orange stains," and to elephantiasis, though in this lymphatic obstruction must also concur.

Chills as an exciting or aggravating cause of dermatitis of various kinds, at one time universally accepted, is now often denied, since so many skin inflammations formerly thought to be of nervous origin are with more probability ascribed to micro-organisms or their toxins. Although the explanation may be different the fact remains, and in my belief cannot be disputed in many instances. It seems to me probable that in the reaction following a chill of a large surface of the body, the blood which was driven inwards will return with increased force, draining the viscera for the time being, and leading to the absorption of toxins from the intestine or other viscus, which may excite a more or less extensive dermatitis, which varies either with the difference of the toxin or the special vulnerability of the individual. The *rôle* of toxins and of the nervous system in the production of skin eruptions is set forth in the section on Pathology.

PATHOLOGY.

The pathology of diseases of the skin follows the same laws as those of other tissues, modified by the special differences from other structures in the normal anatomy of the skin. The pathological processes—anemia, congestion, inflammation, hypertrophy, atrophy, and neoplastic growths—are all represented in the various diseases of the skin, though anemia only produces trifling functional derangements, such as pallor and coldness of the surface, and sometimes cold sweating. In addition, owing to its exposed position, parasites, both animal and vegetable, are much more frequent in comparison. The vegetable parasites which are known to produce disease belong for the most part to the hyphomycetes or fungus family, but there is no doubt that the schizomycetes, to which bacteria and micrococci belong, play a more important part in the production of many inflammatory diseases and even apparently new growths, especially of the granuloma class, than has, until recently, been suspected. At the same time, micrococci are so ubiquitous that, although their invariable presence in the skin structures may be demonstrated in any particular disease, it is not until pure cultures of them have been obtained, and the disease reproduced by them, that it can be considered proved that they are the true morbific agents, although the suspicion may be very strong on other grounds.

The diseases in which a schizomycetic microbe is known to be the cause are those due to pus cocci, those due to the seborrheic bacillus, to the tubercle bacillus, leprosy bacillus, and the rarer diseases, anthrax, glanders, and rhinoscleroma. There are still a larger number in which a microbic origin is a practically certain inference, but the organism has not yet been isolated and demonstrated as the *fons et origo mali.*

Psorosperms are no longer considered to be pathogenic agents in the skin, the bodies mistaken for them having been proved to be metamorphosed epithelial cells.

There can be no doubt that the bacillary products called *Toxins*, whether introduced from without the organism or absorbed from within (*auto-toxins*), are important agents in the production of skin diseases. It is unknown whether they act directly on the skin through the circulation, or indirectly through the nervous system; probably they do not always act in the same way. It must, moreover, be admitted that, in the great majority of instances, their action cannot be proved; they are only assumed to be the real factors with more or less probability.

Such are the skin eruptions which occur in the course of, or as the sequelæ of, the exanthemata, gonorrhea, diphtheria, influenza, beri-beri, septicemia of all forms, acute rheumatism, and tuberculosis, and the antitoxin serum injections,* and those of tuberculin. So, too, a large proportion of the scarlatiniform, morbilliform, diffuse, and even the exudative multiform erythemata, urticaria, many bullous eruptions, and most hemorrhagic eruptions, are in all probability also of toxic origin. With all these the list is by no means exhausted, but it is useless to go further in this direction, into the realms of hypothesis. Still less is known of the action of leukomains and ptomains, but something is known, and more is suggested as to the effects of retention of morbid products as in jaundice, glycosuria, granular kidney, and the absence of the thyroid, etc. What is known suggests that further inquiry on all these lines will have fruitful results.

The Primary Plaque.—Brocq first pointed out that in pityriasis rosea there is a primary patch which exists for some days before the generalization of the eruptions. This idea is, I believe, capable of extension to many other diseases of less acute course. I have often been able to trace a similar mode of development in *first* attacks of psoriasis and lichen planus, but it is not discernible in recurrences of these diseases. Probably it occurs in other diseases also. The inference is that the microorganisms or their toxins multiply in the primary plaque, and then are absorbed into the circulation.

Eosinophilia.—Leredde is a strong advocate of the importance

* Dubreuilh's observations are in favor of the rashes which often follow anti-diphtheritic serum injections, being due to its being obtained from the horse, and suggests, therefore, that other animals should be used.

of these cells, when in excess in the blood, as indicative of a toxic action, and wishes to found a class of "hematodermites," to include all cases in which eosinophilia is notably present. Much more research is required before this view can be accepted, but it is more fully discussed in the pathology of pemphigus and dermatitis herpetiformis.

Nervous System.—The etiological connection of the nervous system with cutaneous disease has been much discussed of late years, especially as to what are, and what are not, trophoneuroses. In the present state of our knowledge this is largely academic, except where anatomical changes in the nervous system can be demonstrated. The facts relating to this part of the subject have been summarized by myself,* and these show that: While the nervous system may determine the occurrence, distribution, extent, and intensity, it has no influence on the kind of eruption; and, further, that less serious consequences ensue from cutting off the nervous supply than from irritant or inflammatory lesions of the parts of the nervous system that affect the skin; that the kind of eruption produced by the nervous system varies greatly, often without any evident reason, when the nervous effect is apparently the same in place and kind; that the same eruption may owe its origin to any defective link in the nervous chain from the center to the periphery; that the same kind of nervous lesion, that at one time appears to excite an eruption or other nutritive defect in the skin, even more frequently, produces no change in the skin whatever.

The lesions other than atrophic, which result when innervation is abolished, are often traceable to external injurious influences which the tissues, when unprotected by the nervous system, are unable to resist; but we know nothing of the conditions that determine the nature of the eruption or other skin defect, when the nerve lesion is irritative, nor what it is that determines whether there shall be any eruption or none at all.

* "Lesions of the Nervous System etiologically related to Cutaneous Disease," *Brain*, vol. vii. (1884), p. 343, with many references to literature and cases. There is also a good summary of the position of the nervous system in relation to diseases of the skin by Auspitz in Ziemssen's "Handbook," p. 124. Schwimmer's "Die neuropathischen Dermatonosen," is an excellent monograph; Kopp, "Die Trophoneurosen der Haut," and Leloir's writings may also be consulted.

This uncertainty of effect suggests that the nervous influence is an indirect one.

The cerebral effect appears to vary according to whether its control over the vaso-motor center is increased or decreased, and to the secondary changes it induces in the cord. No localizing lesions have yet been found for its influence on the vaso-motor center. In the spinal cord the fibers that preside over the nutrition of the skin are bound up with the sensory fibers, and reside, therefore, mainly in the posterior columns. Outside the cord the path is by the posterior roots, the spinal ganglia, and the sensory fibers, and lesions of any one or more of these may lead to changes in the skin.

The changes observed in *Graves' Disease* * must be reckoned as indirectly nerve phenomena. In this abnormalities of pigmentation have been constantly noticed, such as freckles, local or general bronzing, and leukoderma; a greasy condition of the skin, cold sweating of the palms or soles, dryness and thinning of the hair and nails are also frequent. Vaso-motor instability shows itself in urticaria, typical, factitious, or as localized edema; hemorrhagic erythema is occasionally seen.

Localization.—While the skin, as a whole, is often affected almost from the beginning in the different processes enumerated, the individual skin structures may be found, to a certain extent, to take a predominating part in some diseases; but it is exceptional for one alone to be affected, and the longer the process lasts the more likely is the whole skin to be involved. Thus the vegetable parasitic diseases invade chiefly the upper layers of the epidermis; the horny layers are greatly hypertrophied in tylosis and other callosities; the prickle-cell layer is chiefly involved at first in psoriasis; the papillary layer in eczematous inflammation; the deep part of the corium in sclerodermia; in acne vulgaris, the inflammation is chiefly about the sebaceous glands; in papular diseases, round the hair follicles; in miliaria, about the sweat apparatus. Eczema is a good example of an inflammation beginning in the papillary layer, and extending, when of sufficient duration, to the whole skin structure both above and below it.

* Dore, *Brit. Jour. Derm.*, vol. xii., 1900, p. 353, gives a good *résumé* and bibliography.

DIAGNOSIS.

A THOROUGH knowledge of general and special semeiology and pathology is essential to the formation of an accurate diagnosis, the importance of which is so obvious as a necessary preliminary to successful treatment that no insistence on it would appear necessary, were it not that it is too often vague and indefinite, not only from ignorance of the characters of skin diseases, but from want of system, thoroughness, and trained accuracy of observation.

Such feeble attempts as "erythema," "pityriasis," "lichen," and "lichenoid," with which so many are content, are utterly useless, both for designation and as a guide to treatment; and if those who uttered them only realized that they were merely saying redness, scaliness, and pimples in a foreign language, they would not take so much trouble to say so little, though no doubt they are convenient cloaks to conceal ignorance from the patient.

A certain method is necessary in conducting the investigation. The patient should always be placed in a good light, and it is essential in most cases that it should be daylight; so much is color, especially if at all yellow, modified by artificial light that, unless this is unusually white, eruptions of a faint yellow may be overlooked altogether. Jullien recommends a cobalt blue glass as an aid to the early recognition of secondary syphilids.

Completeness of Examination.—The whole eruption should always be seen, if possible, as a perfectly erroneous idea may be conveyed by merely seeing the part presented by the patient, which is selected either because it gives the most annoyance or is the most easy of access, while the most typical features of the rash are perhaps only to be found elsewhere.

In men and children there is no difficulty, as they can always be stripped if the room be properly warmed; while in women, one has often to be satisfied by seeing the eruption by installments; but where there is any doubt, this at least should be in-

sisted on, as the patient would be the first to blame the doctor if any error arose from imperfect examination; at the same time, the subject must be led up to with gentleness and tact, after preliminary conversation has put her at her ease.

On first seeing a patient, the sex, apparent age, general conformation, complexion, and aspect are noted. Certain questions are then to be asked. "How long have you had it?" is the first and most important; it often clears the ground of so much, and will, in many cases, be decisive as to the nature of the disease. Thus, in a widespread erythematous eruption, a duration of two or three weeks would at once exclude all the exanthemata for which it might be mistaken; or, in an infiltration, a duration of several years, with very slow extension, would point to lupus rather than syphilis.

The next question is, "What was its course?" A large number of eruptions develop in a characteristic way, and alter considerably from their first appearance. This is especially the case in erythema multiforme, in many cases of eczema, in urticaria papulosa, etc. An eruption is also often modified by various circumstances besides time, such as scratching, poulticing, or previous treatment by another practitioner.

Then the eruption may come out all at once, as in herpes; or in successive crops, as in pemphigus; or by continuous or intermittent spreading, as in pityriasis rubra, and in many cases of eczema; or some lesions will be coming and others fading, as in secondary syphilids and hydroa; or again, there may be constant recurrences just when the disease appears to be cured, as occurs commonly in eczema.

The third question is, "What symptoms, especially as regards itching, fever, etc., attended or preceded the eruption?"

The fourth question, "What is its cause?" has to be answered, as a rule, by the doctor himself, after eliciting from the patient, by question and physical examination, the various external and internal conditions antecedent to the outbreak. A knowledge of general and special etiology is necessary for complete investigation on this point, which would be deferred until the nature of the eruption has been determined. Whether the eruption is only part of a general disorder, or is a disease of the skin itself, will often be decided by the presence and nature of the constitutional symptoms.

The physical characters of the eruption must now be examined.

The eruption as a whole should primarily engage attention, first as regards its distribution and extent. The importance of noting the distribution cannot be too much insisted upon. It is halfway and often more to the diagnosis, generally pointing in the direction in which further investigation should be made.

Thus, it may be universal, as in pityriasis rubra, pemphigus foliaceus, or lichen acuminatus; general, in many cases of eczema and psoriasis, and many erythematous eruptions; and more or less limited to one region or part in a large number of eruptions. It may be symmetrical, as in lupus erythematosus; unsymmetrical, as in lupus vulgaris; unilateral, as in herpes zoster and morphea; irregular and disseminate, as in scabies and parasitic eruptions generally; though in tinea versicolor it is generally irregular and aggregate. Then, is the lesion single, as in rodent ulcer; or multiple, as in most eruptions? Is it of uniform character, as in scarlatiniform eruptions; or multiform, as in syphilis, scabies, and eczema? Investigating still more closely, is there any definite arrangement of the individual lesions, either in groups in the course of a nerve, as in herpes zoster; or in circles or segments of circles, as in tinea circinata, etc., or in lines, as occurs sometimes in lichen planus; or in patches, round, oval, or irregular, as in psoriasis and many others?

The lesion itself has now to be examined. Is it a primary lesion, such as a macula, an erythema, a papule, nodule, tumor, or infiltration; vesicle, bulla, pustule, or wheal; or some special lesion, as a wart, horn, or burrow: or is it a secondary lesion, and therefore scaly, scabbed, or crusted, excoriated from scratching, or otherwise fissured, ulcerated, scarred, or stained?

Then, its pathological nature must be determined. Is it due to congestion, inflammation, hemorrhage, hypertrophy, atrophy, a neoplasm, or a parasite, either animal or vegetable?

Finally, the general condition of the skin must be noted, whether it is dry or moist, greasy or rough, etc.

The various points of inquiry may be grouped in the following way to impress them on the mind of the student, as they affect the patient, his disease, and the lesion.

SEX.
Occupation **PATIENT** General Condition.
AGE.
SYMPTOMS.
Duration **DISEASE** Course.
CAUSATION.
DISTRIBUTION.
Nature **LESION** Effects.
CHARACTER.

TREATMENT.

Diseases of the skin should be treated upon the same principles as diseases of other organs, and require, therefore, an accurate diagnosis, supplemented by a correct appreciation of their etiology and pathology. Unless the practitioner has a sound knowledge of general medicine, his treatment, except in a few local affections, will generally be as unsatisfactory to the patient as it ought to be to himself, and he will be driven to resort to the miserable subterfuge of the bungler, that "the rash is better out than in." The popular idea that it is dangerous to cure eruptions quickly, or, as the laity put it, "to drive the rash in," is as erroneous as the notion that nearly all skin diseases are due to impurities in the blood. Their external position facilitates the application of topical remedies; and as the skin, like other organs, may be idiopathically diseased, local treatment may then do all that is required; so, too, it is often sufficient when, although the internal cause has ceased to act, the skin disease persists. And even when local remedies are not curative, they may be valuable palliatives and contribute much to the comfort of the patient.

In a large proportion of cases the combination of internal and external treatment is nearly always advantageous, and often necessary, for the comparatively rapid and effectual treatment of the majority of skin affections—hyphomycetic and animal parasitic eruptions, some atrophies and neoplasms, being the most notable exceptions to the value of internal treatment. Internal remedies are often of value even in bacterial diseases, as in many of them the condition of the organism plays an important part in favoring or otherwise the development of the microbe. Even in some hyphomycetic diseases, such as actino- and blasto-mycosis, internal medication has proved an important aid.

INTERNAL TREATMENT.

The character of the internal treatment depends upon the constitution, peculiarities, and general state of health of the pa-

tient, in nearly all cases. It is comparatively seldom that the name of the disease of the skin is the determining factor, and it is not until the most careful investigation has failed to detect any departure from health that resort should be had to one or other of the few drugs which act, or are supposed to act, directly on the skin. Since there is no organ or system which may not be directly or indirectly the main factor in the production of some skin affection, it is obvious that, from this point of view, an attempt to discuss the treatment of skin affections by attacking the organ primarily at fault, would be really a dissertation on general therapeutics; and because this is not attempted in this work, and attention only called to the more direct means at our command, it must not be supposed that it is considered of small importance; indeed, advancing knowledge shows that the more experience and medical acumen the physician possesses, the less is he driven to resort to arsenic and other specifics. General hygiene, tonics, such as iron, cod-liver oil, quinine, the mineral acids, nux vomica, etc., play a large and important part in the treatment of skin eruptions, and when they are indicated on general grounds, should be given regardless of the nature of the skin lesion in most cases; but this is not without exception. Thus sea air aggravates the great majority of cases of eczema, even where such a climate would be otherwise indicated; while in the interval of the attacks it may be highly beneficial. Probably, of all conditions requiring attention, dyspepsia and other disorders of the alimentary canal are the most important. Alkalies, bismuth, vegetable bitters, nux vomica, and the various means for producing regular evacuation of the bowels, are constantly in requisition.

Dietary naturally plays a most important part. This must be suited to the condition of the digestive organs of the patient, but even when these are sound, it must always be borne in mind that most inflammatory affections have an intimate sympathy with the gastric mucous membrane, and whatever irritates that aggravates the skin trouble. The dietary, therefore, while it should be as nutritious as possible in most cases, should be bland and easily digestible; all highly spiced food, condiments of all kinds, should be avoided; salted foods are also often injurious, because they are less digestible, and tend to give the stomach more trouble, though they need not always be absolutely pro-

hibited; oatmeal, and bran-containing preparations generally, do not suit those who have acute inflammatory affections; again, infants and young children with gastro-intestinal catarrh, either acute or chronic, can seldom digest starchy food, which should therefore be avoided, or given sparingly, and then with maltine.

Alcohol is a subject on which patients are very anxious. Speaking broadly, as a rule, the less the better, except in very moderate doses; alcohol dilates the vessels of the skin, and is therefore contra-indicated in inflammatory affections, in which it generally aggravates the pruritus and increases the hyperemia. Nevertheless, in persons of weak digestion, a small quantity at the beginning of a meal, especially after fatigue, will often, on the one hand, make just the difference between eating with an appetite, digesting well, and consequent restoration from the fatigue; and on the other, aggravating the exhaustion from the patient having too little vital energy to eat or digest. In elderly people, also, it is seldom wise to break up too suddenly the habitual use of alcohol, or indeed almost any habits not positively deleterious.

Alcohol should generally be given, if at all, in the form of a very small quantity of a pure spirit well diluted, or one of the lighter wines, such as claret or hock, which must, however, be perfectly sound or mature. As a rule, the stronger wines, such as port and sherry, and the imperfectly fermented products, such as beer, porter, and the sparkling wines, are more or less injurious.

Of the more direct remedies, a foremost place belongs to

Arsenic.—Unfortunately, with too many it is used indiscriminately, as if it were a panacea for all cutaneous woes; but this is far from being the case, and it is often positively injurious. To get good results from its use it must be employed intelligently, and with a definite aim as to its intended *modus operandi*. Arsenic acts in two ways, in my belief—directly on the skin, picking out and acting especially, if not entirely, on the diseased tissue, *i. e.*, in what one may call a local manner; or it may act as a stimulant to the peripheral ends of the nerves, and perhaps to the vaso-motor and trophic centers.

Physiological experiments made by Ringer, Murrell, and Miss Nunn on the frog, show that it acts powerfully upon the epithe-

lial layers. The epidermis peeled off the dermis, beginning at the deeper layers, the degeneration progressing from within outwards; and in the human subject, universal desquamation ensued in a case of poisoning. That the action is mainly a local one is shown in the treatment of psoriasis, for while under its use old patches often get quite well, new ones may form, even when the patient is fully under the influence of the drug. Its local action is further illustrated by its deposition in the form of a brownish-black pigmentation, limited to the site of the diseased area. Possibly the greater instability of the cells of the diseased area may, to some extent, account for this apparent elective affinity of the arsenic.

Other diseases in which it is of great service are chronic cases of lichen acuminatus, or lichen planus; in these, too, its action is probably chiefly on the epithelial layers.

Its action through the nerves is seen best in pemphigus, dermatitis herpetiformis, and chronic urticaria not dependent on digestive derangements, and in frequently recurring erythemata, whether congestive, or exudative, or hemorrhagic, and in recurring sweat eruptions.

In small doses it is useful in controlling iodid and bromid eruptions, but its *modus operandi* is not clear.

Arsenic is contra-indicated in nearly all acutely inflammatory affections, which are often aggravated by it, and the pruritus is generally much increased in affections dependent on indigestion or other irritable conditions of the alimentary canal, owing to its irritating the gastric mucous membrane, as in most cases of acne rosacea, dyspeptic urticaria, and active eczematous eruptions; indeed, it is scarcely ever necessary or even desirable in eczema, although largely prescribed by many practitioners. Even in psoriasis, and other diseases where it is generally suitable, it should not be commenced until all derangements of health, other than that of the skin, have been rectified as far as possible. Arsenic is seldom of any benefit in deep-seated inflammations, or in non-inflammatory affections, but Köbner has found good results in hypodermic injections for multiple sarcomata.

The mode of administration is of importance. It should always be given after food. Although there are a large number of preparations, the most important are the liquor arsenicalis,

or Fowler's solution, arsenious acid, and the new salt cacodylate of soda.

The other preparations, such as the liquor sodæ arseniatis, liquor arsenici hydrochloricus, solutions and syrups of bromid of arsenic, arseniate of iron, etc., have their advocates, but practically all the good that can be obtained from arsenic can be obtained with one of the first three preparations, though Donovan's solution occasionally finds a place, when it appears desirable to administer arsenic and mercury simultaneously. When Fowler's solution is given, it should be always well diluted and combined with a vegetable bitter, tinctura lupuli being one of the best, and if there is any gastric discomfort a little tinctura opii is a useful addition. Some begin with a small dose, and gradually increase it up to ten, or even twenty minims, if the patient bears it well; others commence boldly at once with ten minims. Although in a good many cases this latter plan succeeds, if it should irritate, it may render it impossible to give the drug at all, for some time to come. The more cautious method is therefore safer and preferable. Arsenious acid is given in the form of a pill, and the portability of pills often renders the solid form more convenient for the patient. The Asiatic pill (see Formulæ at the end) is a favorite method on the Continent. A formula much used by myself is, arsenious acid gr. 1, pulv. glycerrhizæ gr. xxix, ext. lupuli ʒ i; divide in pil. 30. One to be taken three times a day after meals.

Some authors, notably Hunt, think that arsenic should be pushed until its toxic effects are produced; this is, in my opinion, always to be avoided, if possible. Puffy eyelids and irritation of the conjunctiva should always be a sign to diminish the dose, though not necessarily to suspend it altogether. In some people very moderate doses will produce severe gastro-intestinal irritation and necessitate the abandonment of the treatment. It must be borne in mind that fatty degeneration of the liver and kidney, with albuminuria, may be induced by the prolonged administration of full doses; and in the skin, general pigmentation and keratosis of the palms and soles, which in a few instances has led to cancer.

Cacodylate of Soda.—Cacodylic (Dimethyl-Arsenic) acid is an organic compound of arsenic (As (CH) 2 O. OH). Although the sodium salt contains forty-six per cent. of arsenic, it is

claimed that the equivalent of large doses of arsenic may be given without toxic effects on the organism, and without irritating effects, whether given by the stomach, rectum, or subcutaneously; further, its therapeutic advantages are said to be very great. Danlos found it to be particularly efficacious in psoriasis, general lichen planus, dermatitis herpetiformis, and tubercular glands, and in all general diseases in which arsenic is indicated, especially pernicious anemia and phthisis. The sodium salt is free from the virulence and offensive smell of the acid, it is highly deliquescent, and therefore cannot be given in ordinary pills. The dose recommended is four-fifths of a grain per day to begin with, which is equivalent to nearly forty-eight minims of Fowler's solution, and increased up to 1 1-2 grains or ninety-five drops of Fowler's solution. On the other hand, when given by the mouth it becomes rapidly changed in the stomach and produces an intense alliaceous odor of the breath and urine. Moreover, its alleged non-toxic effects are only relative. Murrell found that after eleven one-grain doses of the sodium salt in pill sudden and dangerous symptoms of acute arsenical poisoning were produced. It is obvious that it is not safe to begin with anything like the dose recommended above; probably one-twelfth of a grain would be quite enough. Personally, I should be inclined to risk such a dangerous drug only in serious diseases, like general sarcoma, and then give it hypodermically, for which a formula is given in the Appendix. It can also be obtained for this purpose in sterilized tubes which contain one cubic centimeter of aseptic solution containing five centigrams, or .8 grain, which is the French daily dose, to be given for a week, and then rest a week.

Salicin and Salicylates.—In 1895 I published a paper* upon the advantages of salicylate of soda in psoriasis and some other diseases of the skin. A very large experience enables me to speak with more confidence of its value; but salicin has been substituted for salicylates, as the latter have so often disagreeable effects, while salicin rarely disagrees. Briefly stated, it covers the same ground as arsenic, often succeeds where the latter fails, *e. g.*, in a spreading psoriasis, and is likely to be successful in all diseases in which the presence of a pathogenic microbe

* *Lancet*, June 8, 1895, p. 1421, and *Brit. Jour. Derm.*, vol. vii., 1895, p. 229.

is probable. It is particularly successful in extensive cases of psoriasis, of lichen planus, in pityriasis rosea, and in bullous affections, in many hyperemic forms of lupus erythematosus, and has proved of temporary benefit in several cases of mycosis fungoides, some infiltrations disappearing, and even some tumors diminishing, and in one case of multiple giant-celled sarcoma large numbers of the tumors involuted in a few weeks. To obtain such results the dose must be an adequate one, not less than fifteen grains three times a day after meals, and this dose may be increased to twenty or twenty-five grains; larger doses are rarely required, but experimentally sixty grains three times a day have been reached without ill effects. Sometimes it has disagreed with the digestive organs, in a few cases it has produced headache and depression, and very rarely a scarlatiniform rash. It has been of no service in eczema except for its hepatic action, and is contra-indicated in most cases of pityriasis rubra.

Thyroid Gland.—Besides its well-known effect in removing the symptoms of myxedema, as long as it is taken, it has also been strongly recommended in other diseases of the skin, chiefly through the advocacy of Byrom Bramwell, especially for psoriasis, ichthyosis, and lupus vulgaris. Its value in some cases of these diseases is indisputable, although, unfortunately, it has not fulfilled all that, at first, one was led to hope. Its value is greatest in lupus vulgaris, and its indications and limitations are laid down under the treatment of the several diseases mentioned. The most convenient method of giving it is five grains of the dried gland in tabloid form. It is important to begin with a single tabloid a day, and increase it by weekly increments until fifteen grains a day is reached, reducing the dose if "thyroidism" is produced. Much larger doses have been given when the patient has been kept in bed, but it is rarely desirable, and if the patient is going about, unsafe. It is best given after meals. Thyrocol is the active colloid matter from the gland, and is said to be more regular and reliable than the gland, and there are no products of decomposition in it. It is five times stronger than the gland, and its initial dose, therefore, is one grain. Other derivatives have been suggested.

Quinine.—Besides its administration as an ordinary tonic, it is also sometimes useful in a more direct way; thus, in the acute

stage of pityriasis rubra, in dermatitis herpetiformis, where arsenic fails, or for other reasons, and in the febrile exacerbations of leprosy, quinine is often most serviceable. It is generally necessary to give large doses; five grains every four hours will sometimes be required; given in an effervescing form, with potash or soda, the alkaloid being dissolved in the acid mixture; if the bowels are kept open it rarely disagrees. In chronic urticaria, in furunculosis, and dermato-neuroses generally, and wherever there is a malarial taint, quinine finds an important place in smaller doses.

Antimony.—The employment of this drug in small doses finds strong advocates in Jonathan Hutchinson and Malcolm Morris;* the latter used it in doses of ɱiij to ɱvij of the wine in acute and subacute general eczema of adults and children (in appropriate doses), in some hyperemic cases of psoriasis, and in prurigo. To a certain extent I can bear him out, but the cases must be very carefully selected, and where there is any debility or gastric irritation it should be avoided, as I have seen a limited eczema spread widely under its administration. Mr. Hutchinson gives it to a very much greater extent in senile and other eczemas, often with opium.†

Antipyrin.—This drug has the recommendation of Blaschko, partly indorsed by Köbner, for the relief of symptomatic itching in prurigo, eczema, lichen planus, and senile pruritus, and as actually curative in some cases of pemphigus and of urticaria, especially that of children. It is certainly a valuable adjuvant in urticaria, and in some cases of dermatitis herpetiformis. It will also often relieve the pain of zoster.

Phosphorus has had advocates in the treatment of psoriasis, eczema, and lupus erythematosus. It may be given in the form of phosphorated oil, in capsules, or in coated pills. A limited experience has not enabled me to say much in its favor.

Turpentine was introduced by myself for inflammatory eruptions, and it is certainly useful in uncomplicated cases of eczema and hyperemic cases of psoriasis, and other forms of dermatitis in which hyperemia is the most prominent symptom. It checks some purpuras, and in a few cases of cancer it has also appeared to exercise a retarding effect. The method of administration,

* *Brit. Med. Jour.*, September 22, 1883, p. 572.

† Jamieson also speaks favorably of it.—*Edin. Med. Jour.*, June, 1892.

which must be strictly observed, is described in the Appendix (Miscellaneous Mixtures).

Tar and Carbolic Acid have been given for psoriasis and eczema, the first in capsules, the latter in pills, gr. 2 in each dose. Both Kaposi and Liveing speak in praise of carbolic acid for psoriasis.

Sulphur has a much higher reputation among the laity than among the profession. It is, however, highly to be recommended, in my experience, in hyperidrosis and sweat eruptions generally; and sulphid of calcium, as Ringer showed, is one of the best drugs for furunculosis, and is useful in the freely suppurating forms of acne. Calcium sulphid to be of any use must be freshly made, and inclosed in properly coated pills, or it soon becomes inert.

Ichthyol is a distillation product of a peculiar bitumen from Tyrol, with sulphuric acid. As met with in pharmacy, it is really ammonium sulpho-ichthyolate, and is a treacle-like liquid with a disagreeable odor, miscible with water and fats. The soda salt is also in use. It contains a considerable proportion of sulphur, some of which is eliminated by the skin, of which I received an unwelcome proof in the case of a lady who, after taking ichthyol for some time for an erythematous eruption of the face, used a lactate of lead lotion, and almost immediately the sebaceous secretion of each pore was turned black, giving the appearance of the skin being thickly covered with small comedones. To Unna belongs the credit of introducing it, and he and many of his followers claim a very high place for it in so large a number of diseases of the skin, including leprosy, as should considerably simplify cutaneous therapeutics. As an internal remedy, I have found it useful in reducing some of the hyperemia in affections of the face, such as in some of the erythemata, lupus erythematosus, and acne rosacea. It appears to do this by leading to the contraction of dilated vessels, and sometimes it may do so indirectly by its beneficial effect on catarrh of mucous membranes. Thus, while giving it to a lady with lupus erythematosus of the face, she was entirely cured of a severe dysmenorrhea of twenty years' duration; conditions due to chronic rheumatism are also benefited by it. The dose is three to five minims in pills or capsules. As a local application it occupies only a small place in my practice; it is too dirty and

disagreeably smelling an application to allow of its being used except at night, without the patient giving up his avocation. It has, however, many friends, who recommend it for numerous and diverse complaints; I have found it most useful in some of the seborrheic forms of dermatitis.

It is least objectionable combined with a zinc gelatin paste, and this is the form in which I generally employ it for dry eczemas; but lotions, soaps, varnishes, and ointments are used. Unna classes it with pyrogallol and chrysarobin as a reducing agent.

Thiol (made by heating oil gas with sulphur) is very like ichthyol in its action and appearance, but without its disagreeable smell; it may be obtained either as a forty per cent. liquid or as a powder. Whether internally it acts like ichthyol I am not yet sure, but I have found it useful in some cases of recurrent winter eruptions, as an external application combined with Lassar's or zinc gelatin paste in subacute eczema without much discharge, and have also used it as a one or two per cent. lotion. Schwimmer claims good results with it, used externally, in erythema multiforme.

Tumenol (bitumen and oleum) is another candidate for favor in this class. Neisser speaks well of it for moist eczema of moderate severity, superficial burns, and ulcers. It is really tumenol sulphonic acid, and is a dark powder with a slightly unpleasant odor.

Resorcin is also recommended by Unna for a similar class of cases. This, with sulphur, ichthyol, sugar, linseed oil, and other reducing agents, when diluted, and applied locally, act as keratoplastic agents, as Unna calls them, *i. e.*, they "make the swollen and defective horny layer harder, thicker, and drier, so that it may again become more fit to take up fat." Resorcin is a good antiseptic and parasiticide, and being soluble in water and spirit, and neither objectionable in color or smell, is useful in many affections, such as eczema when dry, lupus, ringworm, favus, seborrhea, epidermic thickenings, etc.

Iodin and Iodids.—Besides their use in syphilis, especially in the tertiary stage, iodin and its preparations are of great utility in strumous affections. Liveing is a strong advocate for the use of the tincture in three to five minim doses, for lupus vulgaris, and in small doses the potash salt is often very useful in gouty

eczema; much smaller doses are required for non-syphilitic affections than for the syphilo-dermata, except in the case of psoriasis, for which gigantic doses have been recommended by Haslund.

Diuretics.—Just as the skin can often be made to help the kidneys in their difficulties, so can the kidneys be called in to the aid of the skin. Many chronic inflammations, and some acute ones, may be relieved by diuretics, the acetate and other preparations of potash being the chief aids in cases with a gouty or rheumatic taint, or wherever there is defective elimination the spirit of juniper and the infusion of broom may often be usefully combined with these salts. They should all be given freely diluted, and the neutral salts given after meals.

Aperients.—In all cases the bowels should be kept free, and in acute inflammatory diseases, especially eczema, it is often desirable to begin with saline aperients; the sulphates of sodium and magnesium, in equal parts, form an almost tasteless combination. Rochelle salt, in the form of seidlitz powder, is another useful form, and the stock combination of carbonate and sulphate of magnesia with a carminative is constantly in requisition. The sulphate of magnesia in combination with sulphate of iron (Startin's mixture) for acne vulgaris is extremely valuable. In pruritus ani the importance of easy action of the bowels is obvious, but, in all cases, regularity without effort, rather than intermittent violent purgation, should be aimed at.

Mineral Waters.—These have held a high place in skin affections from time immemorial. The various springs useful in skin affections are discussed at the end of this work; only those taken away from their source are alluded to here; they are chiefly the alkaline and aperient waters. Vichy and Carlsbad, the latter laxative also, are the chief alkaline waters; while the aperient, many of which are also more or less alkaline, are numerous; Friedrichshall, Püllna, Æsculap, Hunyadi Janos, Radocsky, "Victoria," Offner, Apenta, and Rubinat are the most useful, their relative strength being in the order in which they are enumerated. A heaped teaspoonful of Carlsbad Sprudel salt, dissolved in two-thirds of a tumberful of warm water, and taken before breakfast, is most useful; it is alkaline, and acts generally once or twice freely, not more. Sulphur waters, such as Harrogate and Strathpeffer, are of value where there is a rheumatic

taint. Levico is ferruginous and is the strongest arsenical water known. Roncegno is another ferruginous arsenical water. La Bourboule and Royat contain arsenic, but in much smaller quantities.

Intestinal Disinfectants.—The doctrine of auto-intoxication by absorption from the intestine has suggested the use of intestinal disinfectants, or those which prevent gastro-intestinal fermentation, and a good deal of success has attended their use in some cases of eczema and urticaria. Creasote, spirit of chloroform, and sulpho-carbolate of soda are most used when action in the stomach is desired, while in the intestine, those which are only soluble in the presence of alkalinity are preferable. Salol, benzo-naphthol, naphthol β, subnitrate of bismuth in large doses, when the bowels are relaxed; they certainly correct or prevent offensive motions and flatus.

Counter-irritation over the vaso-motor centers has been used by me with great success in obstinately recurring eczema, and similar inflammatory attacks. A mustard leaf, or blister, is applied over the vaso-motor center controlling the region affected, viz., behind the ears for the face, along the cervical spine (cervical enlargement) for the bust and arms, over the three lower dorsal and first lumbar spines (lumbar enlargement) for the genital or genito-anal region and lower limbs, or just behind the trochanter for one limb only. It always relieves the pruritus for some time, and often leads to the subsidence of the inflammation, or, if used when an exacerbation of an active eczema is threatened, will often abort or considerably mitigate the aggravation.

LOCAL TREATMENT.

No part of the body is so exposed to parasites as the skin, even in its normal condition, and any disturbance of the surface, especially of an inflammatory character, opens wide the door for their entrance. It is therefore scarcely to be wondered at that as the knowledge of the noxious influence of many of these organisms increased, so also did efforts to destroy them, or prevent their entrance. The consequence has been the employment of microbe destroyers on the one hand, and of various methods of coating the skin to exclude the air, on the other.

In a word, the keynote of modern dermo-therapeutics is ANTISEPTICISM.

Fortunately, the skin offers greater facilities for the application of local remedies than any other organ. They are employed either to cleanse, give temporary relief, or as curative agents.

Baths stand first as cleansing agents, to remove scales, crusts, offensive and other secretions; when plain water is used, boiled or rain water is best; for scales or crusts alkaline baths are most useful, as in psoriasis and ichthyosis. In eczema and very active hyperemic states baths are generally injurious, so that they must not be used indiscriminately, and in eczema, therefore, soaking the part with olive oil or boric acid starch poultices are the best means to remove any scales or crusts. Medicated baths are used, both as palliative and curative agents. As palliative may be mentioned baths of alkalies and mucilaginous substances, such as starch, bran, size, marshmallow, etc., for urticaria and parasitic itching, and in many inflammatory conditions. As curatives may be instanced baths of sulphur in scabies, of tar in some obstinate forms of eczema and psoriasis, and the continuous bath in some severe forms of pemphigus and burns.

Soaps are also used medicinally and as cleansing agents; soda or hard soaps are used for ordinary cleansing, but soft or green potash soap is most efficacious in removing scales, and is much used in ringworm, psoriasis, and seborrhea.

As curative agents may be mentioned Hebra's soft-soap treatment for chronic eczematous infiltration, and, combined with spirit and oil of cade, for psoriasis of the scalp and knee. Without the oil of cade it is also useful for comedones. Many drugs have been added to a soda-soap foundation, *e. g.*, carbolic, salicylic, and boric acids, thymol, naphthol, sulphur, etc., but, as a rule, medicated soaps are of small curative value, as they are so largely diluted and usually applied so transitorily, while in few diseases can soaps be applied continuously, as they are then slightly caustic; further, many antiseptics, such as perchlorid of mercury, undergo decomposition with the soap-basis, and as antiseptics are inert.

"*Mouilla*" is a very excellent liquid potash soap, with a large percentage of glycerin. It is useful in comedones and for cleansing purposes, but has not enough fat for use on the face. For toilet purposes it is important that there should be no excess of alkali, and the best transparent and other soaps are neutral. Unna goes further, and advocates an over-fatty soap, *i. e.*, one containing four per cent. more fat than is necessary for the neutralization of the alkali; and Kirsten's "Mollin" is a soft soap, containing seventeen per cent. excess of fat (suet and cocoanut oil), and with the potash, a little soda and three per cent. of glycerin.

Poultices of bread or linseed are favorite applications, both as soothing remedies and in acute inflammations, as in boils, and to remove scales and crusts; but they are apt to do more harm than good, by acting as culture media for germs, and only those of an antiseptic character, such as boric acid starch poultices, wet boric acid lint, carbolized wet Gamgee tissue, etc., should be used where heat and moisture are indicated.

Bandages are highly useful in supporting relaxed tissues and in keeping on other dressings, as in all inflammatory eruptions below the knee, especially where there are varicose veins. Martin's india-rubber bandage is very useful in ulcers of the leg and in elephantiasis arabum, and the crêpe bandages are light, porous, and elastic.

Ointments are probably the most universally applicable remedies for skin diseases. They consist of various fats, in which medicaments are intimately mixed or dissolved. The fats most commonly employed are—lard, preferably benzoated, which retards decomposition; petroleum fats, such as vaselin, white vaselin, etc.; and lastly, lanolin, introduced by Liebreich, a cholesterin fat obtained from sheep's wool. Compound fats are also employed occasionally, such as spermaceti, or white wax, or paraffin wax, and olive or almond oil in various proportions, according to the consistence required. Resorbin is another compound put forward as possessing great penetrating power. It is an emulsion of almond oil and white wax with a little water, gelatin, soap, and lanolin. Of all these benzoated lard

is the most universally employed. The vaselins at one time threatened to supersede it; but it was found that the claim that they did not turn rancid was not sustainable, and that then they were very irritating, and even fresh vaselin irritates a few skins, possibly from some want of care in the manufacture; finally, Shoemaker and others assert that its penetrating power through the tissues is very inferior to that of lard or lanolin. Lanolin has great penetrating power, and is especially useful where this quality is required, as in ringworm, for mercurial inunction, psoriasis, etc. It has also the advantage of being readily miscible with watery solutions; it is, however, very sticky when used by itself, and requires to be mixed with a third part almond oil or the heavy paraffin oil, to make a good ointment base. Ointments are of five classes—soothing, astringent, antiseptic, stimulating, and parasiticide. The last are only part of a large class of remedies.

Soothing ointments are such as protect the inflamed part from the injurious influences of air and moisture, and comprise all simple ointments, such as spermaceti, cucumber, cold cream, unguentum simplex P. B., etc.

Astringent ointments are generally soothing as well as astringent, and comprise most of the preparations of lead, zinc, bismuth, boric acid, the acetate and oleate of lead (diachylon). The oxid and oleate of zinc and lead, and boric acid are those chiefly employed, and are suitable for most forms of dermatitis, especially eczema. To get the best effects from them, they must be continuously applied by being spread thickly on strips of linen or lint, and bound on. Unna's salve-muslin preparations are convenient; a loosely woven muslin is soaked in the ointment, and can be quickly and closely applied.

Antiseptic ointments are chiefly used in pustular forms of dermatitis, such as pustular eczema and impetigo contagiosa, and comprise ointments of iodoform, iodol, boric acid, ammoniochlorid of mercury, salicylic acid, carbolic acid, ichthyol, thiol, etc. Where there is active inflammation, weak ointments, continuously applied, answer best.

Stimulating and antiseptic ointments are numerous, and often synonymous, and only a few can be mentioned. They are of great utility in numerous chronic inflammations, such as psoriasis, chronic eczema, lichen planus, prurigo, etc. They

comprise preparations of tar and its derivatives, oil of cade, oil of birch, carbolic acid, etc.; thymol, naphthol, Goa powder and its active principle chrysarobin, pyrogallic acid, salicylic acid, and various preparations of mercury and sulphur. The quantity varies according to the amount of stimulation required, and each has its peculiarities; and much experience is required in the selection of the right drug and the strength of the preparation; but where there is any doubt the weaker preparation should always be chosen, and at first used over a small area, and, if suitable, the strength increased as required. As a rule they are applied intermittently, being rubbed on two or three times a day.

Oils and Liniments.—Simple oils, such as olive, almond, linseed, cod-liver, or castor oil, are bland applications, and are used either to soften and remove scales or crusts, or to soothe and protect a highly inflamed skin; thus, pityriasis rubra, acute psoriasis, and the like, are much benefited by being wrapped up in oiled bandages. The crusts of pustular eczema on the scalp, for instance, are best removed by strips of flannel dipped in olive oil and applied closely for some hours. Olive oil with lime-water forms the well-known Carron oil, useful for burns and superficial inflammations; the addition of calamin and oxid of zinc to this constitutes calamin liniment, which is a highly valuable preparation, best applied by dipping bandages into it and wrapping the affected part up; it is much more convenient and economical than ointments when the diseased area is extensive, as in pityriasis rubra. Petroleum oil, as used for lamps, is a cheap and efficient application for extensive pediculi capitis. Chaulmoogra oil is used for strumous affections and leprosy, both internally and externally. There are also many essential and stimulating oils, which are used in combination with less active vehicles, such as oil of cade, oil of birch, oil of turpentine, Gurjun oil (used in leprosy), and many others.

Lotions are applicable to a great number of forms of disease, and are, as a rule, more convenient than greasy applications, as most of them can be applied intermittently. Like ointments, they are soothing, astringent, stimulating, antipruritic, etc.

Soothing lotions are a large and important class—lead ace-

tate and lactate, oxid of zinc, calamin, bismuth in suspension, black wash, boric acid, bicarbonate of soda, and borax, are the most important members of this class. They are generally combined with a small proportion of glycerin, to prevent too much desiccation. Glycerin of lead subacetate, which is used diluted, is a most important preparation. Boroglycerid is another useful glycerin preparation, and glycerin of carbolic acid is a good parasiticide. They are chiefly used in active inflammations.

Stimulating and antiseptic lotions contain corrosive sublimate, carbolic acid, tar (especially as liquor carbonis detergens), thymol, sulphur, sulphid of calcium, acids, alkalies, cantharides, nitrate of silver, and many others, often with more or less alcohol to increase the solubility or to promote evaporation and produce cooling. They are used in chronic inflammations, such as psoriasis, seborrhea, eczema, acne vulgaris, and rosacea.

Astringent lotions have a less frequent employment except in hemorrhage and hyperidrosis, and contain substances like tannic acid, alum, acetic acid, etc.

Antipruritic lotions are extremely valuable for urticaria and pruritus without eruption. The best are liquor carbonis detergens, sanitas, terebene, salicylic acid, carbolic acid, benzoic acid, hydrocyanic acid, and alkaline lotions.

Dusting powders are used to dry up and astringe, as in hyperidrosis, intertrigo, and eczema. Rice, starch, arrowroot, kaolin, emol keleet, lycopodium, asbestos, brown or white fuller's earth, iris root, talc, and silicic acid are the usual vehicles, and with them are combined oxid and oleate of zinc, boric acid, calomel, oil of cade, or creasote. They must be intimately mixed, and the powder free from grittiness and impalpable. Unna's plan is a good one, viz., filling long, narrow, muslin bags with one of these powders, quilting the bags across to prevent shifting, and fastening them to such parts as the groins, round the scrotum, under the breasts of fat women, etc., in eczema, intertrigo, etc. They are not suitable where the discharge is inflammatory and very copious, as they form crusts with the exudation, which often produce great discomfort.

Parasiticides are animal or vegetable destroyers. Sulphur and its sodium, potassium and calcium compounds, destroy

both animal and vegetable life; naphthol, styrax, and Peruvian balsam are useful in scabies; stavesacre, white and red precipitate, and corrosive sublimate are used largely for pediculi; chrysarobin is one of the most powerful vegetable parasiticides. But their number is legion, and the reader is referred to the section on Parasitic Diseases for more particulars.

Bactericides.—Iodoform stands first in importance for skin diseases, on account of its destructive influence on pus cocci and tubercle bacilli, seldom producing local irritation, as perchlorid of mercury does. Iodoform, if absorbed in large quantities, is poisonous; unfortunately, too, its penetrating and nauseating odor limits its use, and persistent efforts to find odorless substitutes have only been partially successful as yet. Iodol and aristol are much less powerful; of the two, iodol is rather stronger than aristol in my experience, and is a fair substitute for iodoform where that cannot be used. Dermatol has not fulfilled its promise; it is a bismuth subgallate, it is much weaker than iodoform, and is of no use for chancres. I have used europhen with more satisfaction; it is an iodin compound, with an odor compared to saffron, but not very strong. It can be used in the same cases as iodoform, except, perhaps, where tubercle bacilli are concerned, and acts well, though it is probably not quite so powerful a bactericide as iodoform. Loretin, another iodin compound, is of distinct value, and the odor is not very objectionable. Orthoform, useful as a local anesthetic, may, however, lead to irritation and necrosis.

The sozo-iodol salts of soda, potash, zinc, and mercury are also good antiseptics; but the soda and potash salts are too painful to be dusted on a wound. They are, however, soluble in water, the sodium salt especially; and as they are very clean, inodorous applications may be used in antiseptic lotions for hair washes, etc. Sozo-iodolate of mercury is strongly recommended by Schwimmer for the treatment of syphilis by intramuscular injections, as it is much less painful than the perchlorid. I also use it in the same way for leprosy. Pyoktanin, blue and yellow, are anilin dyes, and this circumstance rules them out of court for most skin diseases. They have been successfully employed for epithelioma and similar malignant growths.

Caustics are chiefly employed for lupus and new growths generally, and are of all grades, from discutients, such as salicylic acid, iodin, mustard, and cantharides, up to those producing gangrene, such as caustic potash, arsenic, chlorid of zinc, caustic lime, nitrate of silver, ethylate of sodium, chromic and pyrogallic acids; the last three are not so strong as the others. Caustic potash is very powerful and the pain does not last long, but as it is liable to diffuse into the tissues farther than was intended, it must be very cautiously used. Arsenic is very valuable, as it picks out the diseased tissue, but should only be used over a small surface at a time, as fatal absorption has occurred when employed over a large area. Chromic and salicylic acids are used for warts and corns; salicylic acid is an important keratolytic, in the form of plaster or paste, to remove thickened epidermis. Chlorid of zinc does good service, but acts slowly, and is painful for a long time, but it is more manageable than caustic potash. The solid stick of nitrate of silver is valuable for boring out lupus nodules. Acid nitrate of mercury and nitric acid are good superficial caustics, and are used for chancres, post-mortem warts, and lupus vulgaris and erythematosus. Other agents are in occasional use.

Special Media.—*Hard pastes.*—Pick of Prague first employed gelatin, with a little glycerin, as a medium for applying chrysarobin, pyrogallic acid, etc., without staining the clothes. Salicylic acid and other medicaments were also used.

Unna has improved on Pick's formula by using less gelatin and incorporating glycerin, and so formed an excellent hard base to which may be added such medicaments as are required. Such *hard pastes* are suitable for dry eczema and other inflammations where there is little or no discharge. The paste is melted by placing the vessel containing it in hot water, and is then painted on with a stiff brush, and dabbed with cotton wool to prevent the surface from being sticky. He has also devised lead, starch, and gum pastes, but they have only a limited application, as they must be freshly made, and are not very manageable.

Soft pastes.—One of the most useful, with something of the character of an ointment, is Lassar's starch, zinc, and vaselin paste, with a little salicylic acid, for eczema where it is dry or

when the discharge is only moderate. It is spread thickly on the diseased surface, and covered with a many-tailed bandage of butter cloth. The formulæ for these and other pastes are given in the Appendix.

Unna's plaster muslins are also much used. The plaster muslins consist of a very thin sheet of gutta-percha backed with undressed muslin, and coated on the right side with an adhesive substance, with oleate of alumina, containing one or more medicaments. The drug, being in a magma on the surface, acts more powerfully than when incorporated in the plaster substance, in the usual way. Another variety is called *Paraplasts*, which fit and adhere well on uneven surfaces.

The salicylic acid plasters are the most valuable with or without creasote, the latter being used for lupus. The others Unna uses most are those of mercury and carbolic acid for boils and other phlegmonous inflammations, resorcin for severe acne vulgaris and rosacea, and the zinc oxid and mercury plaster as a substitute for inunction in syphilis. They are prepared of different strengths, and are obtainable in this country.

Varnishes.—A variety of these have been devised. *Traumaticin*, devised by Auspitz, is very valuable. It consists of gutta-percha dissolved in chloroform; it is troublesome to make properly (*vide* Appendix), and the British Pharmacopeia therefore uses bisulphid of carbon instead of chloroform as a solvent. The varnish resulting is of good consistence, but impossible to use on account of its fecal odor. For psoriasis, for which traumaticin is chiefly used, five or ten per cent. of chrysarobin or pyrogallic acid is mixed in and the emulsion painted on. Or Besnier's modification may be used—ten per cent. of chrysarobin in chloroform is painted on, and then varnished over with traumaticin.

Collodion applications are extremely valuable, especially the non-flexile, which acts by mechanically compressing the part as well as excluding the air. Simple collodion is useful in chilblains and in lupus erythematosus; for the latter, also, salicylic acid or resorcin is sometimes usefully added, and a two per cent. salicylic acid collodion I regard as most valuable for ringworm. Iodin and collodion is also good.

Other films are Kristaline, a proprietary article primarily in-

tended as a lacquer, but recommended as an improved collodion by Leslie Phillips. It is a solution of pyroxylin in wood naphtha containing amyl acetate. Schiff's *Filmogen*, a solution of pyroxylin in acetone, is a similar varnish. The addition of castor oil and Canada balsam make these preparations flexile.

Other varieties are made with tragacanth, such as Pick's linimentum exsiccans, Elliot's bassorin varnish, Unna and Beiersdorf's borax or glycerin casein, all soluble in water. There are others, soluble in spirit, such as castor oil and shellac, Canada balsam and collodion, etc., which have been tried with success in certain cases. There is scope for any amount of ingenuity in these pastes, but the principal aim is the same in all—the exclusion of the air in the most efficient and convenient manner from the inflamed part.

Oleates.—Metallic oxids and alkaloids dissolved in oleic acid were first used by J. Marshall, the oleates of mercury and morphia being those he first employed. Subsequently he invented the zinc oleate, which I was the first to use for skin diseases. Since then Shoemaker has been a prominent advocate for various oleates which he had made by double decomposition—a distinct improvement. The most valuable are—oleate of zinc, oleate of lead (Hebra's diachylon ointment), oleate of bismuth, all efficacious in eczematous inflammations; and oleate of mercury and oleate of copper as vegetable parasiticides.

Mechanical means.—*Instruments.*—The instruments which are especially used in dermatology are *the steel spoon* and the *curette*, for scraping lupus vulgaris; *the multiple scarifier* and *puncturer* of Squire, Veiel, Pick, etc., for lupus erythematosus; *various implements with a central hole*, for facilitating the removal of comedones; *needle holders;* and the *epilation forceps*. Keyes has devised a cutaneous punch for removing small portions of skin; and Nevins Hyde what he calls a massering ball, useful for a species of massage in acne vulgaris. Many other instruments are from time to time advocated by their inventors, but have not come into general use. Most of these instruments are figured in the sections on the diseases in which they are most employed. As aids to diagnosis are various lenses, especially a watchmaker's lens, which leaves the hands free, and where it has to be worn a long time may be mounted in a spec-

tacle frame. A four-inch unmounted lens, such as oculists use, serves the double purpose of slight magnification, and also to examine doubtful lupus or other lesions by glass pressure, the phaneroscopy of Liebreich, and the diascopy of Unna, who dispute as to priority in enunciating the idea, which is simply to press out the blood, which obliterates an inflammatory nodule, but leaves a lupous one still visible as a yellowish-brown spot.

Cobalt blue glass, according to Jullien, enables a secondary syphilid to be recognized earlier than could be done by the naked eye.

Electricity.—Every year almost seems to bring the discovery of some new means of using this agent in the service of dermatology.

The Galvano-Cautery was strongly advocated by Besnier as very useful for lupus in all forms, but is chiefly employed now for lupus affecting mucous membranes, and for removing many small growths.

Paquelin's Cautery is also used for similar purposes.

Electrolysis is an important agent in the permanent removal of superfluous hairs, in the obliteration of small dilated vessels, and in the destruction of nevi and some new growths. The galvanic current has been occasionally used to relieve the pain of herpes zoster, and for pruritus, but it and the Faradic current have found but small employment hitherto in dermatology, except in Raynaud's disease, in which galvanism has been of some service.

The Röntgen, or X-Rays.—Largely through the advocacy of Freund and Schiff these rays have rendered important therapeutic services to dermatology in the treatment of lupus vulgaris, in a more limited degree of lupus erythematosus, in the shrinkage of hypertrophic scars, in the healing of rodent ulcers and some epitheliomata; in coccogenic sycosis, in acne, in epilating for tinea tonsurans and favus, and the removal of superfluous hairs from women's faces, though much has still to be learned to insure permanency of effect and freedom from risk of burns. Much care and experience is required to get the good effects without the bad, as serious sloughing with ulcers which take months or years to heal may ensue from too long or too frequent exposures or the use of "soft tubes," etc., and from other imperfectly known causes.

The Finsen Rays.—Finsen of Copenhagen was the first to show the value of actinic light, from which the heat rays were separated, in the treatment of skin diseases. He used both sunlight and the electric arc with an elaborate and expensive apparatus, which placed it beyond the reach of most private individuals.

Lortet and Genoud of Lyons, whilst utilizing the idea, devised a lamp of moderate bulk and price which could be used by anyone whose house is connected with an electric main, and this has superseded the original Finsen apparatus. The essential parts are two carbons approximated by hand-screws to form an arc light, a metallic double-walled shield, with a constant water current through it to keep it cool and guard the patient against the excessive light and heat. In the center of the shield is an aperture which can be closed by a small metallic box also with a water circulation; closing each end is a rock crystal lens to cut off the heat rays. Against the outer lens, whose size and shape can be adapted to the diseased surface, the latter is pressed firmly, as it is essential to press the blood out of the part to be acted upon in order to get the full effect.

This limits its use to a small area at a time, to dry lesions, exuding surfaces being unsuitable, while mucous membranes are inaccessible; but for these the Röntgen rays are available. Sequeira and others have made slight modifications in the Lortet-Genoud model. The Finsen rays are used mainly for lupus vulgaris, for some cases of lupus erythematosus, and it is said that some cases of alopecia areata have been benefited by it, but probably only cases which could have been more easily treated by other means.

The advantages are the painlessness of the treatment and the neat smooth scar. The disadvantages are the large number of exposures required, and consequent expense, unless the area of disease is small.

High tension and frequency currents were first introduced into therapeutics by D'Arsonval, but Oudin was the first to use them for diseases of the skin. Some deductions must be made from Oudin's enthusiastic recommendations, which not only comprehend similar diseases to those benefited by Röntgen rays, but these currents are said to be especially useful in general and local itching, even the most violent, as in some cases

of pruritus ani, or chronic patches of eczema and psoriasis, and in warts. They are said to be more useful for lupus erythematosus than for lupus vulgaris. Much more experience is required before their uses and limitations are known.

It is suggested that all these forms of electricity, including static electricity, act in the same way, dimunition of blood-supply to the exposed area playing a chief part.

Massage (in the vernacular, "rubbing") is of service in assisting in the absorption of inflammatory induration, in scleroderma, in sluggish circulation of the skin (*e. g.*, "chilblain circulation"), and in acne indurata. Nevins Hyde's massering ball is an ingenious contrivance for carrying out the rubbing in awkward corners, a ball, rotating in a socket with handle, being the essential feature.

Massage has been quacked as usual, having been put forward as a preventive of wrinkles of the face, and forms an important part in the armamentarium of the advertising complexionist.

Other physical agents proposed, but not extensively used, are radiant heat, freezing, and exposing the part to a constant immersion in oxygen, for which G. Stoker has devised various forms of apparatus. Ulcers, lupus vulgaris, rodent ulcer, and epithelioma, etc., have been treated with some success by these means.

CLASSIFICATION.

THE object of classification is twofold—to show the pathological relationship of diseases to each other, as a guide to community of origin; and to serve as a *memoria technica*, which enables the multiform aspects of disease to be remembered and methodically studied as an aid to diagnosis.

The first classification of any real value was that of Willan, though Plenck had foreshadowed it some years before. It was founded almost entirely on the clinical aspect of diseases, grouped according to their elementary lesions. Notwithstanding many other attempts, it practically held possession until that of Hebra was published, the main feature of which was that it applied the general principles of pathology to skin diseases. It is largely a classification of pathological results independently of their cause (on an anatomical basis), and is a great advance on all previous attempts.

There are nine classes: 1, disorders of secretion; 2, hyperemias; 3, exudations; 4, hemorrhages; 5, hypertrophies; 6, atrophies; 7, new growths; 8, neuroses; 9, parasites.

The great advantages of this system are that it is simple and that it deals with the accomplished facts which we see before us when a case comes for diagnosis, and that, consciously or unconsciously, we endeavor to locate the disease in one or other of these categories before we enter on the consideration of its etiology and pathogeny. It is therefore eminently suited for the student; for, although admittedly imperfect, and not quite logically consistent in all its details, while it affords no indication how the pathological changes are produced, except as regards parasites, it is the one which is the most practical, and, on the whole, as pathologically sound as our present knowledge permits.

Therefore Hebra's classification, modified to suit advances in knowledge and clinical convenience, is still the basis of the one employed in this work for the primary divisions, but in the subdivisions the pathological and etiological relationships are

pointed out in tabular and other forms as far as is possible in my opinion.

In grouping together the diseases of the appendages of the skin, I have been influenced solely by the clinical convenience of studying, as a whole, all the diseases of the hair, nails, etc., instead of picking them out from the different pathological groups of inflammation, hypertrophy, etc.

The varieties of dermatitis from drugs, poisoned wounds, etc., and parasitic diseases, have an etiological rather than a pathological relationship.

There are, moreover, a few anomalous diseases, like ainhum, molluscum contagiosum, etc., which do not fit well in any of the classes; their present arrangement is therefore provisional. In short, feeling the hopelessness, at present, of a really scientific and consistent classification, my guiding principle has been what I conceive to be the most convenient, from a clinical point of view, without going so far as those writers who, in despair, have adopted an alphabetical arrangement.

To those whose studies are more advanced, the systems devised by Auspitz in the first place, followed by Bronson and Jadassohn, are worthy of study. Auspitz was the first to endeavor to show the pathogenesis of skin diseases. Jadassohn's classification, the latest of its class, is chiefly etiological, and the rest is physio-pathological; but, though indicative of the line in which advance can be made, our knowledge is too incomplete for it to be of great practical utility at present.*

* *Vide* "La Pratique Dermatologique," vol. i., article "Classification," which gives a review of the principal classifications proposed.

Class I. Hyperemiæ—Congestions.

	Most prominent primary lesion	Presumed etiology and pathogeny.
Erythema simplex	Erythema	Vaso-motor disturbance.
" ab igne	" and pigmentation in rings	Exposure to fire heat. Escape of blood-coloring matter, etc., from the vessels.
" pernio	"	" " damp cold. Venous stasis.
" intertrigo	" with fluid exudation	Sweat irritation between adjacent surfaces. Probably microbic.
" fugax	"	Vaso-motor disturbance.
" roseola	"	Of toxin origin. Superficial inflammation.
" scarlatiniforme	"	" " " "

Class II. Exudationes—Inflammations.

	Most prominent primary lesion.	Presumed etiology and pathogeny.
Erythema exudativum multiforme	Erythema	Toxin. On vaso-motor nerves.
" " iris	" and vesicles	" " " "
Peliosis rheumatica	" and hemorrhages	" " " "
Erythema nodosum	" in soft swellings	" " " "
" " elevatum diutinum	" inflammatory nodules going on to infiltrating fibromata	Unknown.
Pellagra	"	Peripheral poison from diseased maize. Vaso-motor.
Acrodynia	"	Peripheral poison of similar origin. Vaso-motor.
Urticaria	Wheals	Toxic vaso-motor irritability.
" pigmentosa	Persistent wheal lesions	" " " " + mast-cell accumulation.
Prurigo	Lenticular papules	Peripheral neurosis. Cause unknown.
Eczema	Multiform lesions	Pathogeny disputed.
Dermatitis repens	Spreading epidermic denudation with fluid exudation	Primarily traumatic. (? Neurosis).

Class II. Exudationes—Inflammations—*continued.*

	Most prominent primary lesion.	Presumed etiology and pathogeny.
Impetigo contagiosa	Vesicles and pustules	Pus cocci.
Pemphigus neonatorum	Bullæ	Pus cocci.
" contagiosus	"	Pus cocci.
Furunculus	Phlegmonous	Pus cocci.
Carbunculus	"	Pus cocci.
Pustular folliculitis	Hair follicular pustules	Pus cocci.
Herpes zoster	Grouped vesicles	Inflammation of nerve or its ganglion.
" febrilis	" "	Result of general nervous disturbance (? toxic).
" progenitalis	" "	(1) A neurosis (? reflex); (2) a microbe.
Epidermolysis bullosa	Bullæ	Congenital vulnerability to slight traumatisms.
Pemphigus	"	Toxin. On vaso-motor nerves.
Hydroa	"	Abnormal irritability to external irritants.
Dermatitis herpetiformis	Grouped vesicles or bullæ	Toxin.
Impetigo herpetiformis	" pustules	Autotoxin.
Psoriasis	Scaly crusts on red base	Probably microbic.
Pityriasis rubra	Diffuse redness, with copious scaling	Autotoxin.
" rosea	Patches, with fine scales	Probably microbic.
Lichen planus	Papules, flat	Pathogeny unknown.
" variegatus	" " and reticulated scaly spots	" "
" acuminatus	" acuminate	" "
" scrofulosus	" minute convex	Toxin of tubercle bacilli.
" spinulosus seu pilaris	" follicular, spiny	Unknown.
Dermatitis	Multiform lesions	Various.

Class III. Hemorrhagiæ—Hemorrhages.

Purpura	Blood Extravasation	Some toxic, some bacillary.

Class IV. Hypertrophiæ—Hypertrophies.

	Parts affected.	Presumed etiology and pathogeny.
Ichthyosis	Epidermis and papillæ	Congenital. Defective skin secretion.
Verruca	" "	Microbic.
Clavus	" "	Local irritation.
Cornu	" "	(?)
Callositas	Epidermis	Friction—sometimes congenital.
Keratosis palmæ et plantæ	"	Congenital or acquired. Some of the latter of microbic origin.
" pilaris	Hair follicles	Usually congenital.
Porokeratosis	Sweat orifice keratosis	(?)
Keratosis nigricans	Horny and papillary layers	(?) Toxic or mechanical injury to sympathetic.
" vegetans	Follicles	Probably microbic.
" follicularis contagiosa	"	" "
Angiokeratoma	"	(?) Cause, predisposed to by feeble circulation.
Sclerodermia	Corium	(?) Neuropathic inflammation and endarteritis.
Sclerema neonatorum	"	Low vitality.
Edema neonatorum	"	" "
Elephantiasis	The whole skin	Lymphatic blocking and overgrowth.

Class V. Anomalies of Pigmentation.

Lentigo	Pigment + in spots	Sympathetic neurosis.
Chloasma	" + in patches	" "
Albinism	" diffuse	Congenital absence.
Leukodermia and melanodermia	" disturbance + and —	Sympathetic neurosis.

Class VI. Atrophiæ—Atrophies.

	Parts affected.	Presumed etiology and pathogeny.
Atrophodermia or xerodermia pigmentosa	Corium	Congenital defect.
Atrophodermia albida	"	" "
" senilis	"	Senile.
" progressiva	"	Unknown
" striata	"	Stretching of skin.
" maculata	"	Unknown.
" neuritica	"	Inflammation of nerves.
Ainhum	All	Unknown.

Class VII. Neuroses—Sensory Diseases.

Hyperesthesia.		
Dermatalgia, including erythomelalgia.		
Pruritis.		
Anesthesia.		
Perforating ulcer		Traumatic when nerve protection absent.
Morvan's disease	Recurrent whitlows	" " " " " from cord lesions due to cavities in the medulla.

Class VIII. Neoplasmata—New Formations.

Molluscum contagiosum	Prickle layer	Microbic irritation, degenerated cell accumulation.
Xanthoma		Toxic cell-irritation.
Colloid	Corium	Cell degeneration. (? Cause.)

Class VIII. Neoplasmata—New Formations—*continued.*

		Character of lesion.	Presumed etiology and pathogeny.
	Lupus vulgaris	Nodules and infiltrations	Granulomata, due to direct presence of tubercle bacilli.
	" verrucosus	" with wartiness	
	Scrofulodermia	" " "	
	Tuberculosis miliaris	Nodular ulceration	
	Erythema induratum	Nodular infiltration	
	Lupus erythematosus	Infiltrating. Feeble circulation	No tubercle bacilli. Pathogeny unknown.
	Syphilis	Early inflammatory, later infiltrating	Micro-organism unknown.
	Lepra	" " " "	Lepra bacillus.
	Rhinoscleroma	Infiltrating	Special bacillus.
Benign.	Keloid	Fibrous structure	Unknown. (? Microbic.)
Benign.	Fibroma	Fibro-cellular	Embryonic growths, but not necessarily present at birth.
Benign.	Myoma multiplex	Muscular	Some myomata are acquired.
Benign.	Neuroma	Nerve sheath fibrous growth	
Benign.	Nevus pigmentosus	Epidermic growths, not always pigmented	Epithelioma adenoides cysticum, adenoma sebaceum and some forms of milium might be included in this group; see also sarcoma capitis.
Benign.	" vascularis	Blood-vessel growths	
Benign.	Lymphangiectodes	Lymphatic vesicles	
Benign.	Lymphangioma tuberosum multiplex	Epi- or endothelial cystadenoid growths	
Benign.	Telangiectasis	Dilated blood-vessels	Acquired.
Benign.	Angioma serpiginosum	Groups of dilated blood-vessels which spread peripherally.	Unknown.
Malignant.	Carcinoma	Epithelioid cells, not from epidermis.	
Malignant.	Epithelioma	Epithelial " of epidermis.	
Malignant.	Rodent ulcer	" " of appendages of skin.	
Malignant.	Paget's disease	" " of milk ducts and of appendages of skin.	
Malignant.	Sarcoma	Embryonic connective tissue cells.	
Malignant.	Sarcoid	Variable.	
Malignant.	Leukemia and pseudo-leukemia cutis	Adenoid tissue of lupus granuloma type.	

Class VIII. Neoplasmata—New Formations—*continued.*

		Character of lesion.	Presumed etiology and pathogeny.
Fungating Neoplasms.	Mycosis fungoides	Granuloma.	Auto-toxin.
	Yaws	"	" Contagious microbe.
	Verruga peruana	"	" " "
	Furunculus orientalis	"	" " "
	Granuloma inguinale tropicum	"	Microbe unknown. ? Pus cocci.
	Papillary growths—acanthoma	"	Pus cocci

Class IX. Morbi Appendicium—Diseases of the Appendages.

	Most prominent primary lesion.	Presumed etiology and pathogeny.
A. Sweat Glands—		
Hyperidrosis	Excessive secretion.	
Bromidrosis	Altered quality.	Bacterium fœtidum.
Chromidrosis		
Phosphorescent sweat		
Uridrosis		
Anidrosis	Secretion absent.	
Miliaria crystallina (sudamina)	Superficial vesicles.	Retained secretion from occlusion of sweat ducts.
" vesiculosa	Papular vesicles.	Inflammation.
" papulosa	Papules.	"
B. Sebaceous Glands—		
Seborrhea	Excessive secretion and greasy scales.	Seborrheic micro-bacillus.
Seborrheic dermatitis, or seborrhœides	Multiform inflammatory lesions.	" " " + Bottle bacillus.
Sebaceous cysts	Tumors.	Retention of secretion from blocking of duct.
Milium	White papules.	" " " "
Comedones	Black papules.	" " and Seborrheic micro-bacillus

CLASS IX. MORBI APPENDICIUM—DISEASES OF THE APPENDAGES—*continued.*

	Most prominent primary lesion.	Presumed etiology and pathogeny.
Acne vulgaris	Comedones and pustules	Retention of secretion and seborrheic bacillus.
" rosacea	Redness and pustules	Reflex congestion + inflammatory lesions.
" varioliformis	Necrotic pustules	Seborrheic bacillus + staphylococcus aureus (Sabouraud).
Acne agminata and folliclis	Aggregated and disseminated pustules	? Of tuberculous origin.

C. HAIR FOLLICLES AND HAIR—

Concretiones	Growths on the hair-shaft	Microbic.
Hirsuties	Excessive growth	Mostly unknown.
Atrophy	Defective "	" "
Alopecia	Baldness	Various causes; chiefly seborrhea.
" areata	" in patches	Some tropho-neurotic, others microbic.
Sycosis	Inflammation of hair follicles	Pus cocci.
Dermatitis papillaris capillitii	" and keloid	" "

D. NAILS—

Pterygium	Overlapping of nail fold.
Onychia	Inflammation in matrix.
Paronychia	" in and round matrix.
Atrophy	Defective growth.
Onychogryphosis	Overgrowth.
Onychomycosis	Fungus growth in the nail.

Class X. Hypho-mycetic Parasites.

	Parts affected.	Presumed etiology and pathogeny.
Favus	Hair and skin	Achorion Schönleinii.
Tinea trichophytina — tonsurans	Hair	Trichophyton microsporon.
Tinea trichophytina — cruris	Glabrous skin	" megalosporon.
Tinea trichophytina — circinata	" "	" micro- and megalo-sporon.
Tinea trichophytina — barbæ	Hair	" megalosporon.
" imbricata	Skin	Special form of megalosporon. (Sabouraud.)
" versicolor	Discoloration	Microsporon furfur.
Erythrasma	"	" minutissimum.
Pinta	"	Unnamed fungus.
Actinomycosis	Skin and deeper tissues	Ray fungus.
Fungus foot of India	" " "	Chionyphe Carteri, a ray fungus.
Blastomycosis	" " "	Yeast fungus.

Class XI. Animal Parasites.

Scabies	Acarus scabiei.
Demodex folliculorum	" of follicles.
Leptus autumnalis	Larva of trombidium holosericum.
Pediculosis — capitis, corporis, pubis	Louse.
Pulex penetrans	Chigoe flea.
Estrus	Botfly.
Larva migrans	Larva of Gastrophilus (?)
Dracunculus medinensis	Filaria, or thread-worms.
Filaria sanguinis hominis	
Cysticercus cellulosæ cutis	Tenia, or tape-worm embryo.

PART II.—SPECIAL.

CLASS I.

HYPERÆMIÆ—CONGESTIONS.

This class includes all cases of mere congestion of the skin; but while there are some, like erythema fugax, which are really only congestions, it includes others in which congestion is only a prominent early feature, as there are but few in which the process is not accompanied by inflammatory effusion, unless the primary congestion is speedily relieved. It is therefore to some extent a conventional class, in which congestion is the prominent, but not necessarily the exclusive manifestation.

The clinical symptoms are—redness momentarily removable by pressure, generally increased heat of skin, which itches or burns slightly as a rule, and the seat of the lesion is manifestly superficial, *i. e.*, in the papillary layer.

The shape is indefinite and ill-defined at the border, the size from a mere point to a large patch, the evolution rapid, and the duration a matter of a few hours or days, unless the congestion limit has been passed and the disease has gone on to inflammation.

Hyperemias are active or passive; the active are synonymous with erythema, the passive with lividity of the skin.

Passive congestion is idiopathic and local, due either to mechanical causes obstructing the venous flow, such as tight clothing or bandages, or to exposure to cold. Symptomatic disturbances in the circulation or respiration are more general in their action, and affect the peripheral circulation, especially the extremities, as in cyanosis from congenital heart disease or emphysema.

I know of only one acquired affection of purely passive congestion that would at all attract the special notice of the dermatologist, viz., *congestive mottling in rings*. One instance was

that of a child under Dr. Barlow at the Children's Hospital at Great Ormond Street, in whom, when the legs were exposed, purplish rings about an inch in diameter, with clear centers, appeared slowly on the thighs. Another instance of it was a man with locomotor ataxy, shown by Dr. Lees at the Dermatological Society, on whose legs a similar phenomenon developed when the legs were uncovered; the rings disappeared when the limbs got warm again. In two cases, both girls, recorded by Cavafy,* there was a similar, but persistent condition, though varying much in degree, cold being an aggravating feature, while it was very faint in warm weather. It disappeared on pressure, leaving slight pigmentation. Both upper and lower extremities were affected, and one girl had had rheumatic fever and was subject to "dead fingers."

In Galloway's † case a woman of twenty-one had congestion of the whole skin from vaso-motor paralysis of the superficial cutaneous circulation. The slightest injury produced a serious lesion.

ERYTHEMA.

Deriv.—*Ἐρύθημα*, a blush.

Synonyms.—Rose rash; *Fr.*, Erythème; *Ger.*, Hautröthe.

"Erythema" is the term used to express the clinical aspect of acute congestion, and may be defined as "redness of the skin which disappears for a moment upon pressure." Much confusion has arisen from its being employed indiscriminately for the symptom of redness, irrespective of the cause, and also for two groups of diseases—one the result of hyperemia only, of which erythema simplex is the type; the other due to actual inflammation, of which erythema exudativum is the most important representative. Although they all have the name erythema, it does not imply any relationship beyond the possession in common of the prominent clinical symptom of redness.

Confusion can only be avoided by always using a specific title,

*"Symmetrical Congestive Mottling of the Skin," *Clin. Soc. Trans.*, vol. xvi., 1883, p. 43, with colored plates and references to Kaposi and Auspitz. In *Brit. Jour. Derm.*, vol. vii., 1895, p. 88, he records a case with patches of redness.

† Shown at Derm Soc., Lond. Reported *Brit. Jour. Derm.*, vol. x., 1898, p. 50.

when erythema is intended to represent a special disease. At the same time it must always be borne in mind that the line between hyperemia and inflammation is a narrow one, and many of the affections which are here classed under hyperemia are only so in the majority of cases, while in others the process goes on to exudation. The distinction is, therefore, often one of clinical convenience rather than of pathological accuracy.

A large proportion of both classes of erythema are of toxic origin, the toxin acting, in all probability, on the vaso-motor nerves. Hence these may be grouped with urticaria, many purpuric eruptions, and pellagra, and are angio-neuroses,* of toxic origin.

Erythema elevatum diutinum and erythema induratum do not really belong to this group except in name. The nosological position of the first is doubtful, and erythema induratum is placed with scrofulodermia.

ERYTHEMA HYPERÆMICUM.

In this class swelling is absent or insignificant in the congested areas, and the tint of redness varies from the brightest red to a rosy or purple hue, according to the predominance of arterial or venous hyperemia.

There are two groups: 1. Those of local distribution, due to external irritation; 2. Those of more or less general distribution, due to internal causes.

Group I. includes E. Simplex, E. ab igne, E. Pernio, E. Intertrigo, E. Leve, E. Paratrimma, and E. Fugax.

Erythema Simplex is the congestive redness due to external irritation of moderate intensity.

The size and tint of the red patches vary according to the irritant, the individual susceptibility, and the activity of the circulation. The symptoms are generally a sense of heat, perhaps tenderness and itching of varying intensity.

Etiology.—The causes are very numerous, and may be arranged under the heads of:

* Török, in *Archiv f. Derm. u. Syph.*, September, 1900, p. 243, after a long review, concludes that no actual line of demarcation can be drawn between angio-neuroses and inflammations.

1. Friction, or pressure of clothing.
2. Heat, whether of the sun (E. Solare) or artificial (E. ab igne).
3. Cold, of which pernio, or "chilblain," is a familiar example.
4. Stings, *e. g.*, of the jelly-fish.
5. Various irritants—vegetable, such as arnica, rhus, mustard, chrysarobin, etc.; chemical, *e. g.*, acids, alkalies, sulphur, arsenic, mercurial inunction, etc.

Erythema ab igne.*—This affection is important chiefly as a matter of diagnosis. It occurs in cooks, stokers, and women who toast their legs at the fire. In the early stage it forms rings of erythema and gyrate patterns on the front of the legs, and in one of my cases they were on the forearms and hands also; she used to sit over the fire with her elbows on her knees, resting her chin on her hands. The rings are from an inch to an inch and a half across, not elevated above the surface; the border, one-eighth to a quarter of an inch wide, of a deep red color, gradually becomes browner in tint, and when the legs have not been exposed for some time to the fire the redness fades and leaves only a deep brown, ringed pigmentation, which even the late E. Wilson † erroneously ascribed to syphilis. In exceptional cases, in the early stage, there may be vesication on the erythema, following the ringed shape. Perry regards the lesion as essentially caused by the staining of blood, disintegration occurring in and around the walls of the plexus of superficial veins, and the patterned appearance as due to the distribution of these veins. In this he follows Wilks, who compared it to post-mortem staining. In a case Perry showed at the Dermatological Society an unusual feature was that the markings were distinctly raised, which he ascribed to thickening of the walls of the superficial veins. This and the occasional presence of vesication also show that blood-staining is only part of the process, and that his proposal to substitute ephelis for erythema ab igne is not an improvement. No treatment is required. The only thing to do is to avoid the cause, if not necessitated by the occupation.

* Author's Atlas, Plate XXII., Fig. iv., shows the early stage with vesication in a marked degree.

† "Portraits of Skin Diseases"—Melanopathia Syphilitica, Plate XXIV.

In long-lasting cases the pigmentation is permanent, but fades to some extent in the summer.

Erythema Pernio. *Deriv*—*Πτέρνα*, the heel. *Synonyms.*—Pernio; chilblain; *Fr.* Engelure; *Ger.*, Frostbeule.

Symptoms.—People with a feeble circulation (see p. 62) or of strumous constitution, and many young people up to about twenty years, and a few older ones, are very liable to chilblains in the winter, especially in damp, cold weather: they are much less likely to occur in dry, cold weather of greater severity. They commence as ill-defined erythematous patches on the hands and feet, especially the heel and borders of the feet; the redness has generally a dusky hue, and is accompanied by tenderness and intense itching and burning whenever the feet get warm. If neglected, or subjected to friction from the boots or stockings, more distinctly inflammatory symptoms arise, affecting the tissues more deeply; and vesication and superficial ulceration of an indolent character, and even a small slough, may ensue. In persons * of very feeble circulation, where often the whole extremity is blue from venous congestion,* the chilblains may occur in comparatively warm weather. The only condition that is likely to give rise to error is lupus erythematosus, which sometimes affects the fingers, chiefly the terminal phalanges, as a permanent erythematous blush; in it, however, the duration will be a test, and it persists in summer as well as in winter; moreover, it is not attended with the itching and burning of chilblains, and there is inflammatory infiltration, with more or less scaliness, followed ultimately by superficial atrophic scarring, but it is not liable to break down and ulcerate. Audry says that pin's-head-sized brown spots often follow chilblains.

According to A. E. Wright chilblain subjects have defective blood coagulability, taking from eight to twelve minutes (three to four minutes is the normal), and pernio is especially likely to occur in childhood and in those subject to urticaria and epistaxis, to the "lymphatic habit," to malaria and hemophilia, all conditions of diminished blood coagulability. Except as re-

* According to Leslie Roberts, injections with the old tuberculin may produce or aggravate chilblains.

† *Lancet*, January 30, 1897, p. 303.

gards the blood coagulability, he does not bring forward much clinical evidence of these conditions as etiological factors.

Treatment.—In this prevention is emphatically the best treatment, and may generally be effected by wearing warm coverings to the affected limbs, with thick boots, not spring-sided, and by active exercise, such as vigorous walking, running, or skipping for children.

The hands should be washed in very hot water, not warm, dried very quickly and carefully, and then enveloped in gloves. General measures of invigoration are often required, and Fowler's solution in small doses, commenced as soon as the cold weather sets in, is said to be a prophylactic.

I have found nitro-glycerin of more service; a tablet, three times a day for an adult, facilitates the circulation through the congested area, and is valuable both as prophylactic and curative treatment. Wright, to improve the coagulability of the blood, gives chlorid of calcium from ten to fifteen grains three times a day with, according to him, marked effect both on the blood and chilblains.

Remedial Treatment.—Internally, opium was recommended by Skey. Nepenthe, five to fifteen minims three times a day, is a convenient form of it. Ichthyol in capsule three times a day is said to be effectual.

Locally, at the commencement, calamin lotion should be applied several times a day; afterwards tincture of iodin, painted on, for the feet, or decolorized with one part of liquid ammonia to two parts of tincture of iodin for the hands, is useful, but vasogen iodin rubbed in is better; it is effectual and does not stain. Equal parts of lin. camphoræ comp. and lin. belladonnæ well rubbed in twice a day, or careful strapping, or wrapping up the foot with cotton wool under a bandage, are also efficacious; so, too, is the old woman's remedy of soaking the part in very hot brine. Ointments of ten per cent. of ichthyol, menthol, or chlorinated lime and vaselin are advocated. Forbes Ross advocates a strong Faradic current for ten minutes three times a day; and Lewis Jones the electric bath for ten to fifteen minutes a day. Two metallic plates as electrodes to an induction coil are placed at the ends of an earthenware footbath filled with warm water.

When the chilblain is broken, boric ointment, spread upon

lint, or wet boric lint covered with oiled silk, should be applied; but, above all, rest and general warmth are necessary. Many other methods have their advocates; but if the preventive measures are simultaneously practiced, and one of the above remedies perseveringly applied, they will be successful in giving relief, but any relaxation in the prophylactic means will soon be followed by a return of the chilblains if the weather is cold; hence the large number of "infallible cures" for this common and tormenting affection.

Erythema Intertrigo.—*Deriv.*—*Inter,* between; and *terere,* to chafe. *Synonyms.*—Intertrigo; Eczema intertrigo.

Symptoms.—Some class this with eczema, but by most it is admitted to be an erythema. When in a fat person or in an infant two adjacent parts of the skin are in constant contact, the friction, the moisture, and the heat of the parts are apt to give rise to a superficial redness, together with an exudation of a thin muciform or purulent fluid, which differs from eczematous fluid, inasmuch as, while it stains, it does not stiffen linen, but a true eczema develops not unfrequently. In adults it occurs almost exclusively in fat people at the groin, axilla, or neck, but sometimes at the prepuce or vulva, and under the breasts in women. In infants it often occurs in the folds of the neck, but it is most frequent about the buttocks,* and there is no doubt that the irritation of the wet napkin, whether from urine or feces, is often the exciting cause, and among the poor sometimes, from the urine-soaked napkin being simply dried and used again. The mothers often ascribe it to "thrush," which has "gone through the infant." Many of these cases are really due to congenital syphilis.

According to Parrot there is transitory vesiculation like sudamina at the commencement, and superficial erosions frequently ensue. I have seen the erosions, but not the vesicles; and if they have been there they are seldom present when the child is brought.

Diagnosis.—In adults it has to be differentiated from *eczema.*

* Hodara has written a paper on the "Histology of Erythema of Infantile Buttocks," and gives references to several French writers with whom it is a favorite topic.—*Monatsh. für Derm.*, vol. xxvi. (1898), p. 325. Also French *Trans. Mal. Cut.*, vol. xi. (1898), p. 465.

The difference in the exudation, the position, and circumstances under which it occurs, are sufficient generally to determine the nature of the lesion, but in some cases eczematous inflammation actually supervenes.

In infants the buttock eruption has to be distinguished from *congenital syphilis*, which often manifests itself as erythema of the buttocks; but whereas intertrigo is almost invariably limited to the site of the napkin, the erythema of congenital syphilis extends down the legs often to the heels and soles, and ulceration and other signs of syphilis would generally be present; at the same time it must be borne in mind that congenitally syphilitic children are more liable to ordinary intertrigo than others.

Max Meyer thinks he has found the pathogenic micrococcus.

Treatment.—In adults dessicating powders should be freely dusted on to the affected parts, and a piece of lint placed so as to separate the two surfaces, or the powders may be placed in Unna's powder bags (see p. 88). Good applications are oxid of zinc, one part to three of starch, or one part of oleate of zinc to three of kaolin, finely pulverized; and powdered boric acid diluted with kaolin, or the Sanitary Rose powder, is also useful. In a few cases powders do not suit as well as an ointment, and then boric acid gr. 20 to ʒ j adip. benz. or vaselin is a good application. In others the lactate of lead lotion, constantly applied, is one of the best. In infants, especially with diarrhea, care should be taken that the napkins are changed at once when wetted, the parts cleaned and carefully dried, and the powder or ointment applied; in these cases the ointment is preferable, as the moisture less easily affects the greasy skin. In all cases the parts should be sponged twice a day with a weak disinfectant solution. Lysol ʒ i, aquæ distillæ ℥ viij is a good example. Diarrhea and other defects of health must always receive special attention.

Erythema Leve is applied to the redness frequently seen in edematous limbs, and occurs chiefly on the legs; here there is of course swelling from the anasarca; the skin looks bright red, tense, and shining, and there is, no doubt, more than mere hyperemia; unless the tension of the skin is soon relieved, vesication and ulceration, and even sloughing, may ensue. The term is not so often used now as formerly.

Erythema Paratrimma is an almost obsolete term for the erythema over a bony prominence, etc., that precedes the formation of a bedsore; here, also, the process soon goes on to inflammation.

Erythema Fugax is, as its name implies, a transitory redness of a patchy character, which comes out quite suddenly, mostly upon the face or trunk, chiefly in the young, and after lasting from a few minutes to a few hours gradually disappears. In children it is frequently associated with irritating ingesta, worms, or other cause of irritation of the intestinal canal. Getting heated by exertion, or alternations of temperature, or even mental emotion, will sometimes produce it, but the cause is often obscure. The affection is more allied to urticaria than to the other erythemata.

The *treatment* is conducted upon the same principles as that for urticaria, which see.

Erythema Urticans is only the early or subsiding stage of the urticarial wheal, which is then of a uniform pink color. See Urticaria.

Group II.—This group, according to the definition, would include many of the exanthemata, such as scarlatina, measles, rötheln, beri-beri, etc., and such diseases as pellagra, but the eruption in most of them is the least important element, and all but the last are formed into a separate group on other grounds. It includes also the eruptions produced by many drugs in certain individuals, from some special idiosyncrasy, but all these are referred to under their appropriate heads, and some descriptive adjective is usually added to point out the character of the erythema.

The varieties now to be considered are E. roseola and E. scarlatiniforme.

Erythema Roseola.—Roseola is a term used by some authors to designate some forms of erythema which are of not quite so bright a hue as the others. The distinction is superfluous, but as the term is in common use it must be explained; if retained, it would be better to use it as a specific title to the generic erythema, or for general as opposed to local erythemata. It may be idiopathic or symptomatic.

Idiopathic Roseola occurs mainly among infants and young children. Its onset is generally attended with constitutional symptoms—a transitory elevation of temperature, sometimes amounting to three or four degrees, restlessness, quickened pulse, furred tongue, and perhaps some redness of the palate and fauces, but there are no catarrhal symptoms. After a short but variable period the eruption appears; it may be general or partial, affecting the whole body or only a limb, the face or neck; it is very variable in size and shape, at one time in patches the size of the end of the finger, at another faintly papular, or it may be in rings or gyrate figures; it may come at one place and go at another, and so last several days. Willan gave separate names to some of these phases, such as R. infantilis, æstivalis, autumnalis, annulata, but they are entirely superfluous, and have deservedly dropped into disuse.

Etiology.—Though these eruptions are most commonly seen in children, they may occur in older persons, and both sexes are equally liable to them. In some children the eruption comes out every spring and autumn, and it often appears to be due to disorder of and absorption of some noxious substance from the alimentary canal. When seen in adults it has been ascribed to suppressed gout, changes of temperature, acidity, and many other causes, which are often merely an excuse for our ignorance of its origin.

Symptomatic Roseola.—This may be patchy or diffuse, morbilliform or scarlatiniform, and may occur either in the onset or course of a large number of febrile or other affections. As the rash is only a part of these diseases it does not require a separate description, the circumstances under which it occurs being of chief importance.

Diffuse or large patches of erythema may precede or accompany the outset of the more characteristic eruptions of vaccinia, variola, and less frequently of varicella; it may also be occasionally observed in the algid stage of cholera, in diphtheria and malaria; the last is sometimes called *roseola febrilis*. Less frequently the eruption in any of the above diseases may be scarlatiniform or morbilliform. This patchy erythema or an urticarial rash may also be seen in influenza and dengue, but in these scarlatiniform or morbilliform eruptions are much more frequent, and purpura occasionally occurs. Small patches the

size of the end of the finger, of a dull red color, are the usual accompaniment of the onset of syphilis, and very often of leprosy; but, as a rule, the patches in leprosy are larger and persistent.

It is a futile distinction to try and discriminate between morbilliform and scarlatiniform roseola on the one hand, and erythema scarlatiniforme and erythema morbilliforme on the other. Simply a slight degree of lividity is more apparent in the so-called roseola, but this depends more on the individual than the cause. Similarly, the individual rather than the cause determines whether the rash shall be morbilliform or scarlatiniform, and indeed, whether there shall be any rash or none is often equally the result of idiosyncrasy.

Erythema Scarlatiniforme is the form which the rash takes in the great majority of the cases. It may appear sometimes quite suddenly, punctiform, erythematous, and exactly resembling scarlet fever in most of its features; but it does not begin in any special position, and it is common to find the eruption sharply defined in places, especially beside the nose if the face is attacked, leaving a tract of, by contrast, preternaturally white skin between the two hyperemic areas. In a large proportion of cases the face escapes altogether. The punctiform appearance is not always preserved, the redness becoming continuous, and, as in other erythematous eruptions, the red skin is whitened for a moment when the finger is drawn across it. There is some constitutional disturbance, usually slight, the temperature being 100° F. or 101° F., and sometimes higher, but soon subsiding, and the fauces are reddened more or less.

If the general symptoms are severe, they are due to the disease in whose course the eruption appears. The subsidence of the rash, which occurs in from two to six days, is usually, but not always, followed by desquamation, furfuraceous as a rule, but it may be free and in large flakes, according to the intensity and duration of the erythema. The special recurrent form is discussed separately.

Etiology.—This is not always ascertainable, and such cases are euphemistically termed idiopathic. Besides the causes already stated, it is seen not infrequently in the course of acute

rheumatism; in septicemic conditions, as after surgical operations, but not often from this source, now that antiseptic precautions have been generally adopted; where pus is shut up in a cavity, *e. g.*, abscesses, tubercular peritonitis, and empyema, and associated with carbuncle, I have also seen a discoid erythema with this connection; in gonorrhea, even where no copaiba has been given; preceding, or in the course of enteric fever, according to J. W. Moore, at the end of the first or in the third week, the first being of vaso-motor origin, the second being septicemic; in puerperal women, and in children in the course of pneumonia, ague, and after diphtheria antitoxin serum; in uremia (see p. 59), and tuberculin injections (sometimes morbilliform, or even patchy or urticarial).

Berg * found that the normal serum of some horses would produce these rashes, but the analogy with tuberculin suggests that diphtheria toxin may be a potent factor. Moreover, such rashes occur in the ordinary course of some cases of diphtheria, and it is observable that in a large proportion of cases toxins are the probable cause, whether absorbed from within or from without the body.

I have also seen it in sewer-gas poisoning with an ulcerated throat, commencing on a level with the nipples, sharply defined there, and spreading nearly all over the body, and in a case with artificial anus, auto-intoxication from the bowel was reasonably probable (Lépine and Molière). I have also seen a typical morbilliform eruption with congestion of mucous membranes, and fever preceded by a general corymbose urticaria, clearly traced to a mass of retained feces. Scarlatiniform eruptions are not uncommon after the use of enemata, and are probably due to the solution of the toxins by the enemata and their subsequent absorption.

A precisely similar eruption occurs after certain drugs, especially mercury, copaiba, quinine, belladonna, salicylic acid, etc. (see Dermatitis medicamentosa). In the latter class the rash is probably due to irritation of the alimentary canal acting reflexly on the vaso-motor centers. It may also be produced by

* In connection with this may be noticed Sheild's observation, that when the arterial blood of some patients dries on the skin, an erythematous spot follows and lasts for half an hour or more.—*Brit. Jour. Derm.*, vol. viii. p. 430.

external irritants, especially mercurial inunction, exposure to great heat, etc.

Diagnosis.—This is obviously very important in such a rash, but not always easy, or even practicable. From a well-marked case of *scarlet fever* there would rarely be much difficulty; the fauces, though red, are not swollen; the typical strawberry tongue is absent; the temperature is rarely over 100° F., and soon falls; the rash is often not general, perhaps limited to the trunk, with healthy skin between the erythematous areas, and the borders of the erythema are often sharply defined; the characteristic features of scarlatina would be absent, without which it is never safe to make a positive assertion that the disease is infectious. From mild cases of scarlatina some of the above criteria may fail, and then only time will clear up the diagnosis; meanwhile, isolation is the safe course.

From *Measles.*—The morbilliform eruption may resemble the exanthem very closely, but it would often not begin on the forehead, as measles does, and the rash would often not be general; the prodromata, coryza, and other general symptoms of measles, and Koplik's spots on the fauces would be absent. Instead of the temperature continuing to rise after the eruption was out, as in measles, it would soon fall, and the patient would not be so ill, as in most cases of measles.

From *Rötheln.*—There may be much difficulty, as the elevation of the temperature is often transitory in both; but the submaxillary, occipital, and sterno-mastoid glands are nearly always enlarged in rötheln, and not in the morbilliform rash. There might be evidence of other people being attacked, which would not be the case in morbilliform erythema. In a rötheln epidemic of a hundred cases, Harrison of Bristol met with thirty cases of general erythematous eruption as a sequel or complication.

It must always be borne in mind that the diagnosis of all the exanthemata should never be made on the rash alone, and indeed not on any one or two symptoms, as there is great variation in the development of every feature of these diseases, as regards incubation, prodromata, and general symptomatology, and in doubtful cases a conclusion can only be arrived at by carefully weighing the symptoms as a whole, and noticing accurately how the supposed exanthem differs from the usual type,

remembering that the more fully the rash is developed, the less likely are the other criteria to fail in a real exanthematous fever.

Treatment.—No special treatment is required for the rash itself, which will certainly subside in a few days, but the general indications are to clear out the alimentary canal and to protect the patient from alternations of temperature. If there is irritation or tension of the skin, calamin liniment or lotion would give relief, or the inunction of almond oil or other simple fat. Alkaline and bran baths, with friction, facilitate the completion of the desquamation.

Erythema scarlatiniforme recidivans, or Recurrent Desquamative Scarlatiniform Erythema (Féréol, 1876). Under the name of Erythema scarlatiniforme desquamativum, Besnier, Brocq,* and other French authorities describe a relapsing form which is rare, but very important from the difficulty in diagnosis to which it may give rise. As far back as 1769-1770 Warner of Guy's Hospital reported two cases to the Royal Society, and cases have been recorded under various names since; but it is to the above writers that we owe its clear differentiation. Brocq considers that it is a benign form of pityriasis rubra, but the fact that after each attack of erythema there is a single exfoliation of large masses of cuticle, followed by branny desquamation for a few days only, marks it off from that disease in my opinion.

The disease is probably due to toxins, possibly of more than one kind, absorbed from within, and some drugs, especially quinine, have seemed to be exciting factors of the first attack.

The essential features are an erythema, diffuse or punctiform, which comes out suddenly, on the upper part of the body first, as a rule, and rapidly becomes universal, often within twenty-

* And Besnier, "Path. des Érythèmes," *Ann. de Derm.* "Desquamative Scarlatiniform Erythema," *Amer. Jour. of Cut. and Ven. Dis.*, vol. iii. (1885), p. 225, gives a history and succinct account of the disease, also p. 26 of his handbook, 1892. *Philosophical Trans.*, vol. lix. (1769), p. 281; and vol. lx. (1760), p. 451. L. I. Frank of Milwaukee records two cases, and quotes others in *Amer. Jour. Cut. Dis.*, vol. xv. (1897), p. 116. One case was a quinine erythema, and not on all fours with this disease, but in the other case the first attack was excited by contact with rhus toxicodendron, while the recurrences were not traceable to any special cause. *Brit. Jour. Derm.*, vol. xi. (1899), p. 188, is a paper by myself relating two well-marked cases with comments.

four hours. It is preceded and accompanied by more or less febrile disturbance. In three or four days the skin cracks and soon peels off in large flakes, or sheets, so that in some cases a complete cast of the extremities may be thrown off; the nails in one of my cases came away at a later period, and it also occurred in one of Warner's cases, but this, Brocq says, is exceptional, transverse furrows only marking the attack and its relapses. Usually, also, the hair does not fall off. The peeling does not take place everywhere simultaneously, but in the order in which the different regions are attacked, the palms and soles being always the last to be complete. When what may be called the primary peeling is over, the skin is not at once smooth, a furfuraceous scaliness follows, and there is generally a horny plug at the follicular orifices, in some parts almost spiny to the touch, but the skin gets smoother almost every day until a relapse occurs, perhaps in a week or ten days from the onset, and again there is febrile disturbance and general erythema followed by desquamation, but the relapse is less severe than the primary attack. These relapses may be repeated many times, but the attacks as a whole generally terminate in six or eight weeks, and if there are no relapses in a week or ten days. A private patient of mine had four attacks of complete peeling in five years, the fourth after an interval of four years, the other three being in the first twelve months. There was only slight redness of the skin for three or four days before the peeling commenced, and no general disturbance. The redness always started on the left shoulder, which had been blistered a year before the first attack.

Recurrence is common, especially in rheumatic and albuminuric patients (Arnozan's case five times), and the recurrences take place at intervals of once or twice a year or more. One of my patients had five in seven years, while one of Tilbury Fox's * had nearly a hundred. Brocq says that the first is the most severe, and the succeeding ones become milder, but recur at shorter intervals; but in a case of mine the reverse happened, the first being a mild one and the second and subsequent ones severe. The general symptoms vary considerably: lassitude, shivering, aching, and perhaps swelling in the joints and shoot-

* Third edition, p. 258. Probably this was only a *façon de parler*, but it shows the recurrences were very numerous.

ing pains along the limbs, with a rise of temperature from 100° to 103° F., and occasionally slight redness of the fauces and conjunctivæ precede the erythema for a few hours or days (three in a case of Brocq's), but soon subside after the eruption is fully out, and the patient ceases to feel ill, except for the burning, tension, and occasionally itching of the skin, when the disease is at its height. In a case of Carrier's * of Detroit pemphigus foliaceus developed, but as it only lasted two weeks this diagnosis is questionable.

Etiology.—The first attack occurs most frequently between thirty and forty, but no age is exempt. More men than women have been attacked, and Brocq says dry-skinned persons are more liable to it. My first case said that her skin had been rougher and drier, and that she had ceased to perspire after her first attack, so that possibly Brocq has mistaken the sequel for the cause. I had a patient in whom an attack of scarlatiniform erythema, with elevation of temperature and desquamation, occurred just after each of three successive confinements. In one of them a diagnosis of scarlet fever was made by a physician to a fever hospital. Possibly this is not quite the same as the other cases, and is more allied to the scarlatiniform eruptions not very rare after some drugs, such as mercury, quinine, etc., or they may be all of the same nature with different exciting causes. It is not improbable that all the cases, except those from drugs, are due to absorption of toxic products self-manufactured under varying conditions, at which we can at present only guess.

Diagnosis.—The rapid and universal invasion with an erythematous efflorescence, followed by desquamation in large patches a few days from the onset, the tendency to relapse, and sooner or later to recur at intervals of months or years, are the most characteristic features. The chief difficulty would be to differentiate it from scarlet fever in some cases. In the absence of history of previous attacks the most important points are—the extremely short duration of the prodromal symptoms, the development of the rash not corresponding to the rule of scarlatina, the temperature not being raised so much as would be expected from the full development of the rash, if it were really

* A. E. Carrier, "Proceedings of Michigan State Medical Society," 1889. His second case was possibly due to quinine.

scarlatina, and the abrupt commencement of the desquamation after three or four days in large flakes; and these would, if all the symptoms were taken together, render a decision possible. From the more typical form of pityriasis rubra, the non-persistence of the exfoliation in scales, and the relapses every few days, would make a differentiation, as well as the short course as a whole, whether with or without relapses.

Treatment.—This is simple. A uniform temperature is important, with rest in bed and locally inunction with olive oil or other emollient to relieve the tension of the skin. These are the chief indications. As the theory that the eruption is due to a toxin is very probable, full doses of perchlorid of iron might be administered. In one of my cases salicin appeared to check a relapse and there were none afterwards, so that it would be worth trying in future cases.

Brocq includes as examples of relapsing desquamative erythema cases of the curious rare congenital condition called "**deciduous skin**" or **keratolysis**,* in which the person possesses a skin which, like the serpent's, is cast off periodically, that of the limbs coming off like a glove or stocking. A case of a woman who had done this every month or six weeks from the age of seven if not earlier is recorded by Chevalier Preston of Canterbury, New Zealand, and another by Frank and Sandford of Chicago of a man æt. thirty-three, who from the first year of his life had shed his skin on July 24, each year between the hours of 3 P. M. and 9 P. M. Constitutional febrile symptoms were experienced, and intense redness of the skin ensued; the whole process of exfoliation was completed in twelve days, while in early life it was completed in five days. I have met with a case of a man with tylosis palmæ in whom every autumn the thickened skin was cast off, but the process occupied two months. Klotz reported a very similar case which recurred every spring preceded by nausea and pain in the stomach; this condition had, however, only been present five years. In Sangster's case, a

* *Literature.*—I. *Lancet*, October 22, 1881, p. 703.—II. Quoted in *Med. Press*, September 9, 1891, and republished as a fresh case by J. M. Sligh, *International Med. Magazine*, June, 1893; abs. in *Brit. Jour. Derm.*, vol. vi. (1894), p. 30.—III. *Brit. Jour Derm.*, vol. iii. (1891), p. 172.—IV. *Amer. Jour. Cut. and Gen.-Urin. Dis.*, vol. xi., 1893, p. 30, he refers to Polotebnow's observations, *Monat f. Derm.*, 1887, Supp.—V. "Congenital Exfoliation of the Skin," Sangster, *Brit. Jour. Derm.*, vol. vii. (1895), p. 37.

man æt. twenty-four, from the age of three years the skin was continually exfoliating, without any sign of inflammation, in large and small pieces everywhere, except the palms and soles, which were thickened and sodden from hyperidrosis. In hot weather he perspired in other parts of the body also. In addition, he was subject to three or four exacerbations yearly, in which the skin peeled off like hop scales by handfuls every day. Sangster regarded it as due to a congenital malformation. This case is allied to ichthyosis.

CLASS II.

EXUDATIONES—INFLAMMATIONS.

The various forms of dermatitis constitute a large group, comprising many of the most important and common diseases of the skin, such as eczema, psoriasis, acne, and varieties of lichen. Such diseases as urticaria and pemphigus are also included, though Auspitz and some other dermatologists do not regard them as true inflammations; but the distinction is more theoretical than practical. Acne, sycosis, miliaria, and some others, though belonging to inflammations, are, for convenience' sake, described with the other diseases of the appendages of the skin. Inflammations of the skin are very diverse in their origin, course, and external manifestations, the one connecting link being the presence of inflammation in all of them.

The symptomatology, also, is very wide, almost all forms of primary and secondary elementary lesions being present in one or other of the group. The process may single out one of the skin structures for its chief point of attack, or affect them all, or take only the superficial or the deep layers. Thus, while all layers may eventually be affected, in psoriasis the most conspicuous changes are in the rete; in eczema, in the papillary layer; in carbuncle, in the deeper layers; in acne, the sebaceous glands are primarily affected; in lichen and sycosis, the hair follicles; in miliaria, the sweat glands or their ducts.

A few, like erythema exudativum or herpes zoster, run a pretty definite course; but most, while they may be acute or chronic, tend to go on indefinitely, unless efficiently treated.

ERYTHEMA EXUDATIVUM.

This group includes E. multiforme, Herpes iris, E. nodosum, and Peliosis or Purpura rheumatica.

They are all acute inflammatory eruptions, which occur in attacks, each running a short course, but with a strong tend-

ency to relapse (except E. nodosum) either at short or long intervals. They are characterized by symmetrical, raised lesions of some deep shade of red, extremely diverse in size, shape, and degree of elevation. Some or all of the lesions may, in certain cases, become vesicular or hemorrhagic.

Erythema Multiforme.*—As its name suggests, this disease presents a most varied aspect, chiefly from differences in the size, shape, color, and aggregation of the lesions, but also from the occasional formation of vesicles or bullæ upon, or the occurrence of hemorrhage into, the primary lesion. To these phases different names have been given in past times, which will be explained in the description; they serve to express briefly the aspect presented at the moment to the observer, and they will, probably, be retained, as the eruption is often limited to a particular phase in certain individuals, and that, too, in every successive attack.

Symptoms.—The onset of the eruption is usually preceded and accompanied by constitutional symptoms, slight as a rule, but sometimes of considerable severity. They consist of pains in the joints, and perhaps malaise, slight pain in the head, back, and limbs, gastric disturbances, and sometimes even enlarged spleen; these symptoms, with a temperature of 100° to 104°.5, and a corresponding pulse rate, may lead to the suspicion of acute rheumatism. On the other hand, in many cases, some or all of these symptoms are absent, very slight pains in the joints being the most constant. After a varying interval of from a few hours to four days the eruption appears, usually upon the backs of the hands and feet, and subsequently in crops upon the face and rest of the limbs, rarely on the trunk, and it is especially abundant round the most painful joints. The temperature may fall upon the outbreak of the eruption, though it may keep above

* Author's Atlas, Plates I. to III., illustrates E. papulatum, tuberculatum, circinatum, iris (erythematous and vesicular), nodosum (forearm). A good plate of E. nodosum on the legs, Syd. Soc. Atlas, Plate XXI.

Literature of Erythema.—Lewin, *Berlin klin. Wochensch.*, No. 23, 1876, and *Charité Annalen*. Bd. iii. p. 622; Moritz Kohn (Kaposi), *Archiv für Derm. u. Syph.*, vol. iii. p. 381; Lipp, *Archiv für Derm. u. Syph.*, vol. iii. p. 221, Schwimmer, "Die neuropathischen Dermatonosen," p. 101; Osler, "The Visceral Lesions of the Erythema Group," *Brit. Jour. Derm.*, vol. xii., 1900, p. 227.

the normal for some days, or it may continue to rise until the rash is fully out.

The extent of distribution of the eruption is very variable, for, whilst it may be general, including and even commencing in the mucous membranes of the eye, tongue, and mouth, it is often limited to one or two regions; but whatever other parts may be affected, it is seldom absent from the back of the hands. Although symmetrical in the main, the symmetry is not absolute, the eruption being often more developed, or coming out earlier, upon one side than the other.

It must not be supposed that the following description applies to all cases; indeed, it is only in a very few that all forms can be found in the same patient; generally the eruption stops short at one or other phase, and then, after a short time, involutes without further development, and each succeeding attack generally recurs in the same form. E. papulatum and iris are the forms most frequently, and E. marginatum the least frequently, seen alone. Occasionally, instead of spreading by successive crops, the eruption of E. papulatum will come out suddenly and extensively.

The eruption commences in the form of groups of deep red papules, from a pin's head to a small split pea in size, slightly raised, and obtusely conical or convex **(E. papulatum)**; these speedily enlarge, and if very closely arranged at first, they may coalesce into a slightly raised, deep red plateau or patch; or, if discrete, may enlarge to the size of a nodule or tubercle **(E. tuberculatum** or **tuberosum)**; continuing to develop peripherally, the center becomes depressed, of a purplish hue, and a ring is formed * **(E. circinatum** or **annulare)**. As the effusion is absorbed in the center and spreads at the periphery, zones of color may be produced, varying from purple to pink, and constituting **E. iris**; still enlarging, and meeting adjoining lesions, the ring is broken, and gyrate curves are produced **(E. gyratum)**.

Closely allied to this is **E. marginatum,** which generally begins as a flat disc a quarter or half an inch in diameter, and very rapidly enlarges at the periphery, subsiding *pari passu* in the central older part; joining similar adjacent lesions, it forms

* A very fine example is depicted in Plate XXIV., Sydenham Society's Atlas.

a sinuous broad margin, abruptly limited externally, and sloping internally, rolling onwards, as it were, it traverses the circumference of a limb, or a large area on the trunk, in a few days, leaving in its track fawn-colored pigmentation, which disappears very slowly.

As the groups of papules come out in crops, each crop undergoing similar changes, several of the various phases described may sometimes be seen simultaneously on different parts of the body, fairly earning Hebra's title of "**E. multiforme.**" As accidental features, vesicles or bullæ may form on any of the above lesions **(E. bullosum)**, or hemorrhages may occur into them, and the affected extremities are sometimes livid and edematous. More or less brownish staining of the tissues is almost always left.

Duration.—The duration for all forms appears to be usually from two to four weeks, but many cases by a close succession of attacks go on for a much longer period. Colcott Fox* records two cases in which a brother and sister had never been quite free from E. gyratum for sixteen years, the disease commencing in early childhood, and they had severe attacks every three months, with a constant succession of minor ones. These, however, were anomalous cases; and Pye-Smith,† who also had the cases under his care, took a different view of them.

Children.—The general symptoms, especially the elevation of temperature, are often more marked. The lesions are apt to be more severe, and the contents, if any vesicles form, more apt to become purulent and leave scars. The eruption appears to be less frequently, simultaneously multiform.

Etiology of Erythema Exudativum.—The frequency of all forms together is 11.4 per 1000.

Age.—Though no age appears to be exempt, young adults are the most frequently attacked. The youngest case in my experience was a case of E. papulatum in a child of five months; the oldest, an E. marginatum in a man of seventy-one years, but it is rare in elderly people.

Sex.—The preponderance of evidence is in favor of all forms

* *Clin. Soc. Trans.*, vol. xiv. p. 67, with colored plate, and "Internat. Atlas," Plate XVI.

† *Guy's Hospital Reports*, vol. for 1881.

being more common in the female sex, though Hebra said it was most frequent in males.

Season.—It is most frequent in spring and autumn, especially the month of April, but in many instances cold weather is an excitant.

Previous attacks certainly predispose to others, and their recurrences tend to come out at the same time of year as previous attacks. Hebra says that roseola cholerica is really an E. papulatum, that cholera is the only definite cause he knows of, and that it is never due to local irritation; but this is an error. I have had cases, in one of which exposure of the extremities to cold, in another exposure to the sun, and in a third exposure to brine-laden winds, were certain excitants for E. papulatum; one of these patients was a medical man, who was quite certain about its origin.

Nevertheless, such instances are exceptional. Though unable to get definite proof, I am strongly of opinion that sudden alternations of temperature, especially chills after having been overheated, are frequent determining influences, and that the rheumatic and gouty are more likely to be influenced by it. Lewin and Kaposi agree that irritation of the urethra, *e. g.*, from gonorrhea or instrumental erosions, is another excitant, and Duhring thinks that irritating ingesta may produce it; but these cases are more probably urticarial. In a large number of cases no irritating or exciting cause can be discovered.

Pathology.—Cordua and Luzzato have independently found cocci in the blood and lesions of patients suffering from erythema multiforme, and Manssurrow found bacilli and spores in four cases. These they believe to be the *materies morbi;* and many writers, both in France and Germany, regard it as an acute specific disease, usually, but not always, of a mild type, founding their opinion on the frequent presence of premonitory symptoms of a febrile character, the fairly definite course, and the occasional endemic outbreaks. These views require further proof before they can be definitely accepted, but they are worthy of consideration. Turning to the pathological mechanism of these eruptions, that they are not merely the result of hyperemia is evident even from their clinical features alone, and the anatomy also shows that there is inflammatory effusion both of fluid and leukocytes. The fluid is usually only sufficient to push up

the epidermis into a papule or nodule; but in herpes iris, and occasionally in the other forms, it is in larger quantity, and forces its way between the rete cells and forms vesicles or bullæ.

Lewin,* Auspitz, and Schwimmer † consider them all angio-neuroses, and that the effusion is due to a vaso-motor disturbance when there are no febrile symptoms, and to true inflammation when general symptoms are present. That there is an escape of blood-coloring matter into the tissues is evidenced by the staining left after the departure of the rest of the lesion, and actual rupture of vessels and hemorrhage is the rule in peliosis rheumatica, and an occasional feature in all forms of erythema; in some of these hemorrhagic lesions sloughing occurs.

Anatomy.—In a patch of E. tuberculatum ‡ excised from the side of the neck of a man æt. fifty-four (Fig. 10) I found the upper half of the corium broken up, and the space filled with cell infiltration, very dense in some parts and looser in others, as if separated by fluid. The cell infiltration sometimes extended sparsely to the bottom of the corium, especially along the hair follicles and sweat ducts, but it was, for the most part, confined to the upper half. In some places there was slight proliferation, and consequent thickening of the rete, and the palisade cells were stained with blood-coloring matter. There was no downgrowth of interpapillary processes, and the horny layer was unchanged. The changes, therefore, were essentially those of inflammation of the upper part of the corium.

In the lesions of an E. papulatum of the back of the hands and feet in a case of severe diphtheric throat Finger § found edema with moderate mono-nuclear cell infiltration, especially in the papillary layer and in the deeper part in the course of the vessels and round the several glands and ducts. The papillary vessels were filled with streptococci pyogenes.

Diagnosis.—The multiform and changing aspects of the eruption, the acute onset, the occurrence in crops, the localization to certain regions, the symmetry, the persistence for days of indi-

* *Berl. klin. Wochenschr.*, No. 23, 1876.

† Schwimmer, "Die neuropathischen Dermatonosen," p. 101.

‡ Leloir has also investigated the anatomy of this and some other forms of erythema. Abs. *Annales de Derm. et de Syph.*, June, 1885; and also Plates XIII. and XIV. of Leloir and Vidal, 1891. Ziegler describes a case of E. multiforme as due to streptococci from middle-ear disease, *Path.*, vol. i. (1901), p. 601.

§ "Beitrag zur Aetiologie u. Path. Anat. des Erythema Multiforme," *Archiv. f. Derm. u. Syph.*, vol. xxv. (1893), p. 765. Full abs. in *Annales*, vol. v. (1894) p. 103.

vidual lesions, leaving staining behind, the comparatively slight itching, the tendency to recur at the same season of the year and to be associated with articular pains and febrile symptoms, are the most diagnostic features. It may be confounded with urticaria, rötheln, E. nodosum, and papular eczema.

It is only when the wheals of *urticaria* are red or pink instead of white that any difficulty can arise; to the common white wheals there is no similarity. In urticaria the wheals are evolved

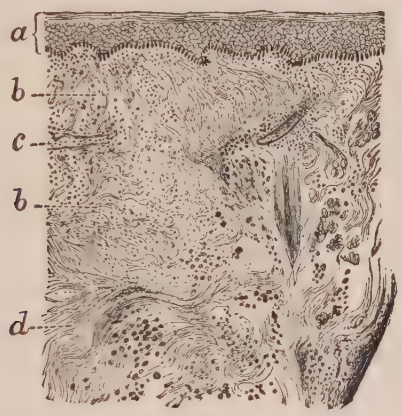


Fig. 10.*—Erythema tuberculatum from the side of the neck, × 125. *a*, Epidermis; *b b*, round cells between the fibers of the upper half of the corium, which are widely separated, probably by serous effusion; *c*, blood-vessel; *d*, normal corium. The dark round bodies beyond *d* are transverse sections of muscular fibers.

in a few minutes, are never such a deep red as in erythema, do not begin as papules and increase at the borders, but attain their full size at once, and are not symmetrically arranged; there is intense throbbing and itching, usually moderate in erythema, except in herpes iris, and it is rare for urticarial lesions to persist for more than a day, or to leave stains behind. There is no tendency to special localization and seasonal recurrence in urticaria, and the outbreak can frequently be traced to irritating ingesta, though external influences play an important part; special constitutional symptoms are almost always absent,

* The case from which this was taken is recorded by Tilbury Fox, *Clin. Soc. Trans.*, vol. xi. (1878), p. 85.

though a slight rise of temperature in very acute and extensive outbreaks may occasionally be observed. In the vast majority of cases reference to these points settles the matter conclusively, but sometimes there is a difficulty in separating urticaria from general papular erythema, as the evidence may be so evenly balanced that different observers may take opposite views.

Rötheln is only to be confounded with E. papulatum.

In both rötheln and erythema there may be transitory and moderate elevation of temperature, or none at all, but the other general symptoms are very different; catarrh of the pharyngeal, tonsillar, and other mucous membranes, with enlargement of the glands behind the sterno-mastoid, are present in rötheln and absent in erythema, and there are no special articular pains in rötheln. The latter eruption begins on the face and forehead, and spreads over the body. The spots are round or oval, not flat, generally remain small, and are of rosy red, never deep red like E. papulatum, and less frequently confluent.

In *eczema papulatum* the papules are acuminate, small, and remain so, and some of them usually become vesicular, while the burning and tingling is much more severe, and constitutional symptoms are absent.

Prognosis.—The disease is almost sure to get well in from one to four weeks, leaving only stains, which disappear a few weeks later, except in the rare instances in which there are pustules, when there is likely to be scarring; all forms, except E. nodosum, are nearly sure to recur, probably at the same time, in the following year. When associated with endocarditis and the other serious conditions mentioned, the prognosis concerns the disease with which the eruption is the concomitant, rather than the erythema.

Treatment.—Since the eruption tends to get well of itself in a short time internal treatment is seldom required, and it is doubtful whether it has any direct influence upon the course of the disease; still, any indication in the shape of defective health should be carefully sought for, and if possible rectified. If the presence of a rheumatic diathesis can be established, salicin or salicylate of soda in gr. 15 doses three times a day, or an acetate and citrate of potash mixture might be given. An effervescing citrate of potash mixture with quinine gr. ij or iij in each dose of the acid portion is a good combination in many cases. In

middle-aged or elderly people gouty tendencies should be looked for and counteracted. In a large number of cases iron with an aperient, such as the elder Startin's mixture (Mixtures, F. 16), is useful. Iodid of potassium is considered to be a specific by Villemin; thirty grains a day cures it, he says, in three or four days. Locally, calamin lotion is all that is required, and if there is much pruritus the addition of liquor carbonis detergens gives temporary relief. In obstinate cases, when fresh crops keep appearing, rest in bed, insuring complete protection from alternations of temperature, is often sufficient of itself to terminate the eruption. When any debility is present careful feeding up is necessary, but alcohol is seldom desirable, and is generally contra-indicated. Relief from mental or bodily strain should be afforded as far as possible.

In herpes iris the patients are often much out of health, and feel weak and languid, and then iron, quinine, and cod-liver oil would be required. Locally, the itching and burning are best relieved by lead lotion, consisting of liq. plumbi subacetatis ℥ xv to aquæ ℥ j; or lactate of lead applied on lint.

Erythema or **Herpes Iris.**— This is always an uncommon affection (1.6 per 1000), but the first variety is much more frequently met with than the second. The mechanism of erythema iris has already been described, but while the general history is the same as that of E. multiforme, its great variability of aspect necessitates separate description.

In the usual types of erythema multiforme vesication is the exception; in these forms it is the rule; moreover, the varieties with which we have now to do seldom occur as a part of E. multiforme, but nearly always arise independently. The difference of aspect between the simpler erythematous form and the vesicular form is so great at first sight that they were for a long time considered to be different diseases, but all intermediate gradations and their general behavior prove them to be only variations from a type.

The common plan of all of them is a central lesion of papule, vesicle, or bulla, and one or more concentric circles round it; in Plate AZ of Wilson's Atlas no less than seven circles of fluid with intermediate purplish zones round a central vesicle are depicted, while the simplest type is in Plate I. of my Atlas. In

this there is simply a one-quarter-inch disc of erythema with a central purplish dot where the central papule subsided as the lesion extended peripherally.

The commonest vesicular type usually begins with a stinging and itching sensation, soon followed by a small, slightly raised red spot, and upon this, in about twelve hours, a conical pin's-head-sized vesicle is formed. The vesicular part increases in diameter, flattening as it does so, but always with a narrow red areola on its outer border. When the lesion is about a quarter of an inch in diameter the fluid is absorbed in the center, and a purplish depression results, or a ring only of absorption occurs, and then a vesicle will remain in the center surrounded by a purplish depressed zone, and outside this a raised ring, white from the fluid beneath, and beyond this the narrow pink areola. This constitutes a typical patch, and it is from these different-colored concentric rings that the name of iris is derived.

In a mild case, when the disc has reached to about half or an inch in diameter, which generally occurs in about a week, it soon begins to involute, the areola fades, the fluid is absorbed, and the disc flattens down, leaving only a purplish discoloration; the whole process being complete in about a fortnight. The favorite positions are the backs of the hands and fingers, especially the thumbs, index and middle finger, the elbows and wrists, the insteps and knees. The lesions are generally symmetrical, though often the corresponding discs are several days later than the first, and are perhaps less developed. As the discs come out in small crops by repeated outbreaks, the disease as a whole lasts from two to four weeks, or even longer.

Variations.—In more severe cases the patches may be much larger by the addition of a similar series of rings, or large irregular patches may be formed by coalescence of neighboring lesions; the amount of effused fluid also varies considerably; the central small vesicle may develop into a large bulla, even up to an inch in diameter, and still larger by coalescence, and there may be hemorrhage into the bulla. Instead of being confined to the extensor aspect of the limbs, it may attack the palms, soles, and other flexor aspects, and also the face and the mucous membranes of the mouth, tongue, palate, and larynx, and in rare instances, the trunk also, so that universal herpes iris may

result; in such severe cases hematuria * also has occurred. I have also seen it all round and also under the nail,† but the nail substance was not affected. When it affects the mucous membranes ‡ the lips may be much swollen, and covered with vesicles or black blood-crusts on the outside, and with muco-pus inside; the mouth can scarcely be opened, the tongue is swollen, and covered with white lines, the remains of ruptured vesicles; the soft palate and uvula may be involved; the orbital connective tissue is swollen and ecchymosed, and there is conjunctivitis. In one of my cases the mouth alone was affected, attacks of bullous aphthæ beginning on the buccal mucous membrane, spread over the tongue and mouth without any skin lesion, and recurred every two or three months; after being under observation for over a year, erythema iris appeared on the back of the hands in one attack, and the patient then remembered that he had had a similar attack some years before. Such cases are often treated for syphilis, and some are reported as buccal hydroa. Superficial ulceration occurs sometimes when the lesions are rubbed, to which the irritation experienced incites the patient, or when the contents of a bulla becomes purulent.

The second variety is rare. The name of herpes iris was first given to it by Bateman,§ and hydroa vésiculeux by Bazin. In this round a central bulla a ring of vesicles is formed, either quite discrete or touching, but so that their separate origin is evident. The vesicles are about the size of a small split pea, much smaller than the one in the center. A second or third concentric ring of vesicles may form outside the first; between the vesicles and rings the skin is of a purplish tint. The following case showed a slight variation from this description. A girl, æt. two years, was brought to University College Hospital with rings of congestive erythema on the face and neck about

* A case in the Vienna hospital, reported in *Brit Med. Jour.*, July 19, 1885.

† Elizabeth M., out-patient, U. C. H. She had annual attacks for ten years.

‡ U. C. H., out-patient Elizabeth J., æt. forty-one, seventh attack; the mucous membranes were as described; round the knees were single and compound bullæ, from half to two and a half inches in the longest diameter. Typical patches were present on the hands

§ Bateman's Atlas, Plate LII. His plate has been repeatedly copied. Hebra's Atlas, Fasc. VI., Plate IV., Fig. 1, shows an extreme instance on the foot.

the size of a crown piece; a few days later these had disappeared, and in the center of their site was a large bulla; round this a ring of discrete vesicles appeared, the contents of which soon became purulent, and when the dried scabs fell off the face was scarred as badly as if she had had smallpox; the child had several slight, almost abortive, attacks in subsequent years, each one slighter than the one before. This recurrence is the rule for all the varieties; the attacks are usually annual, and at about the same time each year, but some patients have three or four attacks per annum.

It is sometimes associated with other forms of herpes, H. facialis, labialis, preputialis, etc.; and on this ground, and because it is vesicular, Colcott Fox would separate this form; but its other features clearly designate it as belonging to erythema, in my opinion.

Etiology.—The etiology of erythema or herpes iris is in most respects similar to that of E. multiforme,* but there is a smaller preponderance of females, 5 : 4 only in my hospital practice. Its tendency to recurrence is also greater. I have known patients who have had three or four attacks a year for twelve years; still, the majority of recurrences are in spring and autumn, though cold is a frequent excitant. In my experience it stands in closer relationship to gout than to rheumatism. Toxic influences also may sometimes produce it, but it is exceptional to be able to prove such to be the case. Thus, mercurial inunction would always produce E. iris in one of Kaposi's patients,† and in another it was the prodromal eruption of variola.

Anatomy.—Parder examined the lesions of a severe and a mild case and found an acute exudative inflammation of the upper part of the corium, accompanied by abundant emigration of polynuclear leukocytes, which rapidly disintegrated and filled the papillæ. He lays stress on this nuclear fragmentation, which was less marked in the mild case. Vesiculation was produced by lifting up of the entire epidermis from the papillæ by the fluid exudation, but Kreibich has shown that it is sometimes intra-epithelial. The appendages of the skin were unaffected.‡

Diagnosis.—This will not present difficulties in well-marked cases in which, symmetrically disposed on the hands, knees, and

* For the Pathology, see that of E. multiforme.

† Kaposi, p. 294, 2d German ed.

‡ J. C. Parder, in *Bulletin* Johns Hopkins' Hospital, vol. ix., 1898, p. 165. Abs. *Brit. Jour. Derm.*, vol. xi., 1899, p. 171.

insteps, there are several concentric rings of different tint round a central lesion, whether that be a purplish spot, a vesicle, or a bulla—and whether there are rings of fluid, or semi-confluent vesicles, or merely erythema without visible effusion round it; but there is a large proportion of cases in which there is only a central dot and a single broader ring of erythema round, as in Plate I. of my Atlas, or where there are other forms of ill-developed lesions when doubts arise. There are, however, always some lesions on the plan described of one or more rings round a central lesion, and the general behavior will show that the eruption belongs to the E. multiforme group. In addition to vesication being so frequent a feature compared to other members of the E. multiforme group, articular pains and febrile disturbances are less frequent precursors of the eruption.

Prognosis.—This is nearly the same as that for E. multiforme generally, but it seldom lasts more than two weeks, and it is even more likely to recur many times in future years.

Treatment.—See under E. multiforme.

Erythema Nodosum (*Synonyms.*—Dermatitis contusiformis; *Fr.*, Érythème noueux) is a disease of childhood and adolescence, being most common between five and twenty and rare after forty and under three years. It is seen much oftener in girls than in boys.

It is still a matter of discussion as to whether E. nodosum is a variety of E. multiforme. Certainly, although second and third attacks do occur, they are the exception rather than the rule, as is the case in E. multiforme (6 cases in 108 had recurrences, S. Mackenzie; none in 80 cases of A. J. Harrison). On the other hand, it occurs sometimes along with E. multiforme, of which I have seen a few instances. In one case there were E. tuberculatum lesions with it, and also herpes labialis. Lewin found other forms of erythema in 25 out of 55 cases; but this is not in accordance with usual experience, which is that such an association is an uncommon one. Perhaps the fact that when the lesions are not over the superficial bones they depart from the usual type may account for the discrepancy; nevertheless, it is sufficiently frequent to show that the different forms of eruption are related, and that E. nodosum is not an altogether independent type, as many authorities hold.

McCulloch * gives a very well recorded case of the conjunction in a boy of fifteen with a strong rheumatic family history. I have also had a case of a woman æt. thirty-three, who suffered from E. multiforme of face and back, of forearms and hands, and as that faded, erythema nodosum developed on the shins.

Symptoms.—It begins generally with articular pains in the lower extremities, with perhaps some febrile symptoms, an elevation of temperature of three or four degrees Fahr., seldom more, and highest in the evening, a furred tongue, and general malaise; but these symptoms, with the exception of the articular pains, may be quite absent. There is pain and tenderness over both tibiæ, and in one to three days from the onset, roundish or oval, symmetrical, node-like swellings appear, with the long axis vertical over the tibiæ. They come out two or three at a time, but are altogether not numerous, seldom more, and generally less, than a dozen. They vary in size, from a large nut to an egg, are not well defined, but diffused gradually into the surrounding tissues; they are tender and painful, rather firm at first, but soften, and become semi-fluctuating, but never suppurate; their color is bright or rose red at first, but they soon get a more dusky hue, and as they disappear undergo the changes in color of a bruise. The eruption usually lasts eight or ten days, but, by the appearance of fresh lesions, may go on for two or three weeks.

Variations.—The tumors may come over the ulnæ, and I have seen them over the scapulæ, the condyles of the humerus, and on the thighs. As a rule, these tumors are smaller than those on the leg.

Duhring says E. nodosum may affect the mucous membranes, and in a boy æt. fifteen, under Fleming at U. C. H., there was a split-pea-sized subconjunctival nodule in the sclerotic of the right eye with typical E. nodosum on the legs. Uffelmann † and Oehne, quoted by Duhring, state that it is a bad omen when it occurs in children with a tuberculous family history, and that it is then associated with general tuberculosis. Amongst the many thousand children that have passed through my hands at

* "A Case of Concurrent Erythema Multiforme and Erythema Nodosum," *Lancet*, April 20, 1901.

† *Vierteljahr. für Derm. u. Syph.*, 1874, p. 174; 1877, p. 230; 1878, p. 324.

the East London Hospital for Children, I have never seen anything to lead me to suppose that there is any connection between tuberculosis and E. nodosum; possibly some of their cases in this connection were really erythema induratum.

*Etiology.**—S. Mackenzie collected 108 cases from different hospitals, and his statistics are therefore of interest and value.

Sex.—He found 5 females to 1 male, Görlitz † in 30 cases found 23 females to 7 males, *i. e.*, only 3 to 1; and Harrison of Bristol in 80 personal cases found 3 to 1.

Age.—S. Mackenzie found 69 out of 108 cases occurred between ten and thirty, 14 under ten, 15 from thirty to forty, and 10 over forty. Comby ‡ met with a case æt. fourteen months. In Görlitz's statistics over half were under ten years and one was two years old.

There is no special seasonal occurrence or recurrence.

With regard to the relation of E. nodosum to rheumatism, S. Mackenzie came to the following conclusion: 1. That E. nodosum is frequently associated with definite rheumatic symptoms, *e. g.*, arthritis, sour sweats, sore throats, etc.; 2. That heart disease (endocarditis) may arise during an attack of E. nodosum, both in cases in which arthritis is present and in cases in which there is no affection of the joints; 3. That these conclusions justify the inference that E. nodosum is frequently, if not generally, an expression of rheumatism, even when no other definitely rheumatic symptoms are present.

Harrison, on the other hand, denies its rheumatic relationship, and believes from his own experience that it never recurs. Görlitz found endocarditis developing in 3 cases in the course of E. nodosum, and as antecedents he noted in 3 acute rheumatism, 1 measles, 1 diphtheria, 1 gastric catarrh, anemia in 9 and nothing at all in 15. It also occurs occasionally in the course

* "On Erythema Nodosum, especially Dealing with its Connection with Rheumatism," by S. Mackenzie, *Clin. Soc. Trans.*, vol. xix. p. 215. A valuable paper, with an analysis of 108 cases. Harrison of Bristol had 80 personal cases in 15,000 cases of skin disease, *Brit. Jour. Derm.*, vol. xii., 1900, p. 250.

† Görlitz, *Münch. med. Wochensch.*, 1897, No. 46, p. 1286. Abs. *Brit. Jour. Derm.*, vol. x., 1898, p. 31.

‡ He read a paper on E. nodosum in infants at the Soc Méd. des Hôpitaux, reported with discussion *Jour. des Malad. Cutan.*, vol. ii. (1890), p. 356. He denies its relation to rheumatism or to palúdism.

of secondary syphilis, but in these cases syphilis has probably only the same relationship as measles or acute rheumatism.

Boïesco * of Roumania has found it to be common in children of from two to eight years old, exposed to malaria, especially as an immediate sequel of an ague attack; but this does not appear to be so common in other malarial countries,† so probably there are other factors. C. F. Moore of Dublin, from 12 cases in his own practice, shows that defective sanitation, especially as regards food and drains, is a strongly predisposing cause. Epidemics of it have occurred. In 1858 Gall observed one in Bosnia among soldiers unaccustomed to the country ‡ and bad food; in 1885 Brunn met with a small epidemic in Jutland, and Von Starck of Kiel observed it in sisters. Exposure to the same defective hygienic conditions accounts for these outbreaks without invoking the doctrine that it is an acute infectious disease, as Lewin, Lesser, Harrison, and several French writers suggest. Lannois,§ however, records an instance in which within a week of the entrance of a case of E. nodosum into a hospital three other patients in a row of beds opposite the first case developed the disease. Cases occur in association with "glandular fever," diphtheria, and other toxic diseases. H. Levy proposes to divide cases into primary, which comprises cases which are varieties of E. multiforme; secondary, occurring in the course of infectious diseases and due to toxins; and thirdly, toxic cases due to drugs, as iodids and antipyrin. The primary cases are also probably due to toxins, so that one and two need not be separated.

Diagnosis.—In E. nodosum the oval tender nodes over superficial bones, like the tibia and ulna, may be mistaken for the *nodes of syphilis.* If, as occasionally happens, these occur in the early secondary period, when they may be symmetrical, red, and very tender, the similarity to those of E. nodosum may be great; but in such a patient the antecedent pains would have been

* Abs. from *Roumanian Archives of Medicine, Brit. Jour. Derm.*, vol. i. (1891), p. 346.

† Moncorvo of Brazil only saw four cases of E. nodosum in a very large number of malarial cases.

‡ It was probably acrodynia, as he confuses that disease with erythema multiforme.

§ *Annales de Derm.*, vol. iii. (1892), p. 585.

severe, and the other symptoms of syphilis well marked, as they would never occur in a mild case.

With regard to the nodes, so common in the tertiary period, the number would be less, except sometimes in congenital syphilis, the development is much slower, they would not be symmetrical, they would be harder at first, would not be red until they had been present for some time, and some evidence of past or present syphilis would doubtless be obtainable. In the rare cases of nodes in children from congenital syphilis there would be for a long period slow development and absence of redness, while the influence of iodid of potassium, a drug which has no effect in E. nodosum, would soon be manifested in nodes of syphilitic origin.

The diagnosis from erythema induratum is given with the latter disease.

Prognosis.—Recovery takes place nearly always in two or three weeks, and recurrence is rare.

Treatment.—Internally, if there are febrile symptoms, the diet should be restricted to liquid nourishment for a few days. A saline aperient, followed by iron, the perchlorid preferably, is appropriate to a large proportion; or, in view of its frequent association with rheumatism, salicin, or salicylate of soda, gr. 10 to gr. 15, according to age, three or four times a day, may be indicated. In older people anti-gout treatment or citrate of iron with citrate of potash or iron and aloes, or other aperients, are most suitable; but no routine treatment can be laid down.

Locally, rest, with the legs elevated, should be strictly enjoined. In some adults who cannot lay up bandaging carefully, but firmly, with an elastic bandage (*e. g.*, crêpe) is the best substitute. One of the lead lotions just mentioned, applied warm, is usually most grateful to the patient. However marked the fluctuation may be, the nodes should not be opened, as absorption invariably takes place.

In a lady of fifty-five, where the pain was very great, the application of an ichthyol paint made by mixing ʒ iij of ether and spirit, and then adding ʒ ij of ichthyol, gave marked relief to a patient in the hands of Brownlie.

ERYTHEMA ELEVATUM DIUTINUM.

This disease does not belong to the preceding group, and is only placed here for convenience. The name only refers to the most prominent clinical features, and was proposed by Campbell Williams * and myself for a rare affection, chiefly of childhood, of which we published a case in 1894. One had previously been published by G. S. Middleton in 1887, and by Judson Bury in 1889. A few other cases have been published since, and Hutchinson has recorded four cases of a somewhat different type, but closely allied in all probability.

My case differs from the rest in the presence of erythema, its recent development (five months), and its involution. In all the others, except a case mentioned by Hutchinson, the lesions have been persistent. I only know of six cases excluding Soemmering's.

The lesions are nodules from a small pea to a bean in size, pink in the early stage, and purplish in those of long standing. Convex at first, they tend to coalesce into irregular lobed infiltrations and to flat raised plaques, but in severe cases distinct nodular tumors are present, even on the palms and soles. In Soemmering's † remarkable case there were huge tumors preventing the hand from closing on the palmar surface; Hutchinson suggests that it should be reckoned in the same category, but it was such an anomalous case that it is better to keep it apart, at all events for the present.

The growths are very firm to the touch and painless. They develop on the extensor aspect of the limbs over the articulations, elbows, knees, and phalanges of hands and feet. They

* *Literature.*—A case of subcutaneous nodules in the hands of a rheumatic patient. G. S. Middleton, *Amer. Jour. Med. Scien.*, October, 1887. Williams and Self, *Brit. Jour. Derm.*, vol. vi. (1894), p. 1. Colored plate and histology. *Illustrated Med. News*, February 23, 1889, and republished in Hutchinson's *Archives*, vol. ii. (1891), No. 8, Plate LXI.

Brit. Jour. Derm., vol. vi. (1894), p 144, by F. J. Smith, and p. 148, also republished by Hutchinson in his *Archives*.

Quinquaud has a model in St. Louis Museum, No. 1599, labeled "Fibromes multiples nodulaires des extrêmités, histologiquement fibromes facsiculés."

† Quoted and the illustrations copied in Hutchinson's *Archives*, vol. ii., 1891, p. 299, Plates LX. and LXIII.

also affect the palms, soles, and the buttocks and ears. In my case, and in White's quoted by Hutchinson, the tumors underwent involution, but in the others they were persistent for years and would probably be permanent on the hands.

Hutchinson * has described a disease, of which he has seen four cases, which has some resemblances to the above condition. The patients were all elderly men of florid complexion (the youngest was fifty-six), and all sufferers from chronic gout. The lesions were purple or plum-colored flat patches, much of which was due to venous congestion. The patches began as nodules, which became confluent, and their nodular origin was lost. The surface was smooth as a rule, but sometimes slightly scaly. Almost all the elevation disappeared by continued pressure, but they only paled at the periphery. The patches developed on the sites of pressure, *e. g.*, inside the leg from saddle pressure or after injury, but had no selective affinity for the back of the articulations. They tended to spread and multiply, and persisted throughout life, treatment having no effect upon them. (Compare with Kaposi's idiopathic pigmented sarcoma and Sequeira's † case.)

Etiology.—This is remarkable; all but one were females, and all were children or young adults. Either in themselves or in their family history there was strong evidence of gout or acute rheumatism. Bury's case had intermittent albuminuria.

Pathology.—They appear to be fibromata of inflammatory origin in the corium. The fact that many of the lesions involute is against their being true neoplasms. Probably they are analogues of the subcutaneous rheumatic nodules.

Anatomy.—The histology of a lesion from the knuckle of Williams' and my case showed that the lesion was beneath the epidermis in the deep portion of the corium, all below the coil glands being normal. It consisted of a fibro-cellular structure, which in great part replaced the normal fibers of the corium. The fibers followed the course of the vessels, being horizontal immediately below the papillary layer, vertical or oblique above, and branching horizontally below in the deep portion of the corium. The cells permeated the interstices of the fibers either singly

* Illustrations of Clinical Surgery, Plate VIII., p. 42, *Brit. Jour. Derm.*, November, 1888. "Symmetrical Purple Congestion of the Skin," *Archives of Surgery*, vol. i. p. 372. He refers to a case of Boeck's of Christiania, of which he has seen the drawing only.

† *Brit. Jour. Derm.*, vol. xiii. (1901), p. 201, colored plate and histology.

or in clumps, and formed accordingly a dense fibrous or loose fibro-cellular structure. The sweat coils were very little, if at all, affected, and no hair follicles were found in the sections. In long-standing cases like Middleton's the fibrous tissue is more developed, and he found the coats of the arteries infiltrated with cells.

Diagnosis.—Comparison need only be made with Hutchinson's cases of purple congestion. The two types differ in the age and sex of the patients, in the position of the lesions, and in the older cases the nodular character was less developed, less firm, and were really edematous. They resemble each other in the gouty or arthritic tendencies of the patients, in the lesions being primarily nodular and becoming confluent into patches of a purplish tint.

Treatment.—This is unsatisfactory. One case got well after taking arsenic and applying liquor carbonis detergens, so there would be no objection to trying them again, but it is probable that the result was merely a coincidence.

PELIOSIS RHEUMATICA.

Deriv.—*Πελιός*, livid.

Synonym.—Purpura Rheumatica.

Definition.—An acute disease, characterized by pain in some of the joints, accompanied by an eruption of red, raised patches or papules, which do not fade on pressure, or by purpuric spots.

This affection, which is rather a rare one, was first described by Schönlein. It presents nearly all the characteristics of exudative erythema, except that the hemorrhages are a constant instead of an exceptional feature, and the joint trouble rather more severe than usual. I have therefore thought it more scientifically consistent to describe it with the affections with which its affinities are evidently of the strongest, than to follow the majority of authors, who place it under Purpura.

Symptoms.—The patient complains of malaise, lassitude, and pains of moderate intensity in the limbs, especially the joints, which are often slightly swollen and tender. After lasting from a few days to a day or two, during the evening or night an eruption appears, and the pains then often abate. In many cases,

but not in all, the eruption is most abundant in the neighborhood of the joints in which the pain has been greatest, and upon the calves; the knees and ankles are always involved, the thighs, buttocks, elbows, and wrists frequently, the trunk rarely. Sometimes the order is different, the eruption preceding the pains. The skin lesions consist of slightly raised papules or patches, from an eighth to one inch in size, bright red at first, like an E. papulatum and tuberculatum, but unaltered by pressure, and soon becoming purplish; or they may be obviously hemorrhages from the first, and not at all elevated. Even purpura hæmorrhagica, with all its various phenomena, may supervene (Scheby-Buch); but this is very rare. A very severe case of this is recorded in full by J. Fayrer,* with extensive sloughing of the tongue, mouth, and penis, but the patient recovered; while S. Mackenzie, in commenting upon this case, relates another fatal case. These, however, run a somewhat different course to the milder and more typical forms, such as the second case of Mackenzie's.

The temperature may be raised to 100° F. or 102° F., but no relation to a fresh attack, the joint affection, nor the eruption can be established, the temperature being often normal, when all these phenomena exist in as great severity as in those in which the temperature is raised. In two or three days, or less, the pain subsides, while the hemorrhages † take the usual time for extravasations to undergo absorption. The attack may recur after an interval of from two days to two or three weeks. The same or fresh joints are again attacked, and the whole process is repeated, though sometimes with variations as to eruptions and pains, the disease dragging on in this way for a period of weeks or months. Purpura has been many times noted as a complication of acute rheumatism; but valvular

* *Literature*.—Author's Atlas, Plate IV., Fig. 1. "Clinical Lecture on Peliosis Rheumatica." By McCall Anderson. *Brit. Med. Jour.*, vol. i. (1883), p. 1103. Fayrer, *Brit. Jour. Derm.*, vol. viii. (1896), p. 73 illustrated, and p. 116 for Mackenzie's article with a valuable analysis of forty-two cases of his own.

† I have seen case of a lady of forty-five in whom all the symptoms above described occurred with a temperature of 102° F., followed by an erythematous papular eruption which did disappear on pressure; attacks recurred every three weeks for some months. They developed after influenza.

murmurs * have originated in the course of peliosis rheumatica, and left permanent organic changes both in the valves and muscular wall of the heart, where there was nothing in the shape of high temperature, the severity of the articular lesions or sweating, etc., to indicate that true rheumatic fever was present. Besnier and other French authors regard this as a proof that P. rheumatica sometimes has an etiological relation with valvular lesions. It may well be, however, that their relationship is only that of community of cause, and that is probably rheumatism.

There is a form of purpuric erythema closely allied to purpura rheumatica which may be indeed identical as regards the rash, but the general symptoms are not so much arthritic as gastro-intestinal, the patient vomiting blood or passing it *per anum*. In a case under my colleague, Dr. Poore, which he asked me to see,—a man æt. about thirty-five,—the intestinal hemorrhage was so great and uncontrollable that the patient nearly died; the rash was in purpuric papules about the elbows, knees, wrists, etc. In a girl æt. thirteen, under me at Shadwell, the rash consisted of bright red papules all over the extensor aspect of the upper limbs, but somewhat dusky red in hue on the legs. They were flatly convex, not definitely circular; very abundant, but discrete on the arms above the elbow, but on the legs were in great part confluent. The whole of the rash, even where of the brightest red color, was unaffected by pressure. This was the fourth annual attack; the three preceding had been at or before Christmas, commencing with severe abdominal pains, vomiting and purging with blood in every motion and vomit, and the breath was very offensive. There was also hematuria, and more albumin than the blood would account for. The first and second attacks were the worst. The rash then was similar to the one I saw with Dr. Poore, but worse, the legs being swollen and painful; the ears had black blisters, and "the eyes turned black." The symptoms generally lasted three or four weeks, but on this occasion she had frequent recurrences, at short intervals, for six months. She was admitted to the hospital, and with rest in bed, tonics, and good feeding, rapidly recovered.

* *Wiener med. Wochensch.*, No. 32 (1883), p. 991; Schwarz on two cases of P. rheumatica with acute aortic insufficiency, in Kaposi's *Clinique*. Abs. in *Ann. de Derm. et de Syph.*, vol. v. (1884), p. 31. Also Oliver in *International Clinics*, vol. iv.—two fatal cases of endocarditis.

It is to be noted that in these cases, while the visceral hemorrhages are so profuse, those in the skin are quite moderate in extent, which constitutes an important distinction from purpura hæmorrhagica of the ordinary type.

A precisely similar eruption of varying grades of intensity, but characterized by the erythematous appearance and absence of alteration by pressure—in short, an **Erythema hæmorrhagicum**—is more frequent without any general symptoms, or with slight pains in some of the joints or edema of the legs. Of this character is the eruption called by Hutchinson,* "purpura thrombotica." In some of the lesions the hemorrhage is sufficient to destroy the vitality of a portion of skin, and a slough ensues. When its mode of formation has not been observed, and the slough separates, the ulcer, in association with a red papular eruption which leaves stains, is strongly suggestive of a syphilitic ulcer. The mode of development of both sore and rash, and the absence of other signs of syphilis, will, if the observer is aware of this form of disease, suffice to distinguish it. I have had a case, sent me by my friend Dr. Coutts, of purpuric erythema multiforme in a girl of twelve, in whom, after pains in the head, knees, wrists, and ankles, a circinate and papular bright red eruption appeared on the extensor aspect of the limbs, unaltered by pressure. Two of the lesions consisted of two concentric circles, and at the ankles there were irregular vesicles and bullæ containing purplish serum. The rash is always worst on the legs.

Etiology.—Women are more frequently attacked than men, say most authors, but Mackenzie's personal cases were males twenty-four, females twenty. It is about equally common in the second, third, and fourth decennia, but is rare under ten and over sixty. Eighteen out of forty-two had had rheumatic fever; and rheumatic subjects generally, as well as those who have had previous attacks, are more predisposed to it. In three-fourths of Mackenzie's cases the joints were swollen during the attack, and an even higher proportion were truly rheumatic. The season has an influence on some people; but of exciting causes little is known, except that chills appear to be the factor in many instances. Probably these only call into play "toxic influence." In a patient who played in an orchestra, whenever

* Syd. Soc. Atlas, Plate XXXIX., and my own, Plate IV., Fig. 2.

he was kept late, the next morning he had an outbreak on his legs. There was no other departure from health.

Pathology.—The most probable conjecture is that it is due to the influence of a toxin, not necessarily always rheumatic, on the vaso-motor system, central or peripheral or both. The lesions are primarily like those of E. exudativum; but why in these patients hemorrhages should be a constant instead of an accidental feature, as usually obtains in erythema eruptions, is inexplicable, unless we suppose that the toxic influence is stronger in hemorrhagic cases; but then it would be stronger still in the less common event of hemorrhage being the only lesion.

While it has so much in common with other forms of erythema multiforme as to justify its inclusion in that group, I agree with Mackenzie that its peculiarities make it recognizable as a special clinical type.

Diagnosis.—The diagnosis presents no difficulty if the occurrence of articular pains, with some swelling and a purpuric eruption, is sufficient; if, in short, joint pains and symmetrical purpura constitute P. rheumatica. It is, however, open to discussion whether all cases in which purpuric extravasation occurs in the course of acute rheumatism are to be placed in the same category, and also whether joint pains and cutaneous hemorrhages may not be due to other toxins as well as those developed in the rheumatic state. At present we are unable to distinguish between them, but it is desirable to recognize that the most typical cases of peliosis rheumatica, in addition to the joint pains and purpura, run a protracted course from a succession of attacks at short intervals. It is also not improbable that the cases with purpuric rash and visceral hemorrhages which I have described, and to which Osler also has called attention, are due to the same toxins acting on different lines.

Prognosis.—It is, in an uncomplicated case, quite certain that the patient will get well; it is equally uncertain when that will be, and it is highly probable that he will have another attack at some future time. In complicated cases the prognosis is that of rheumatic fever, endocarditis, or of other complications, such as the development into purpura hæmorrhagica, when the extent of the hemorrhage into the viscera governs the prognosis.

Treatment.—Rest in the horizontal position is important, get-

ting up too soon being alone sufficient, in many cases, to reproduce the pains and purpura. Even when there is no definite evidence of rheumatic fever, salicylates often give decided relief to the pains, though they do not seem to have any influence in preventing the recurrence in a few days. Quinine and iron, separately and in combination, appear to be beneficial in some cases. The effervescing potash mixture, with full doses of quinine, is often of great value. McCall Anderson * treats it, like ordinary purpura, with turpentine or ergot. A liberal dietary is generally required, often with stimulants, and strict attention must be paid to hygiene and to the special indications of each case; but in many cases the disease runs its course uninfluenced by treatment.

PELLAGRA.†

Deriv.—Ital. Pelle, skin; *Agra*, rough.

Synonym.—Span., Mal de la rosa; or, Mal roxo.

Definition.—An endemic tropho-neurotic disease of toxic origin, produced by diseased maize, and affecting the cerebro-spinal, digestive, and cutaneous systems.

Pellagra was first observed in Spain in 1735, as recorded by Casal in 1762, and is now nearly confined to its northern part;

*H. Mühlbauer cured three cases quickly by giving salipyrin 8 grams a day, and one took 10 grams without ill effect. In the musician I have referred to Fowler's solution kept the disease in check as long as he took it.

† *Literature.*—Hirsch's "Geographical and Historical Pathology," Syd. Soc., vol. ii. p. 217, gives a very good account of the disease, to which I am much indebted. There is also a full bibliography, amongst which the writings of Lombroso and Roussel are most important. Paul Raymond's article, *Ann. de Derm. et de Syph.*, vol. x. (1889), p. 627, gives a good account of the skin symptoms, from which I have borrowed. Ludwig Berger—abridged trans. by Barendt, *Syd. Soc. Trans.*, "Selected Monographs on Dermatology," 1893. Lombroso, "Etiological, Clinical, and Prophylactic Researches." German edition by H. Kurella, 1898, p. 246. Full review in *Brit. Jour. Derm.*, vol. x., 1898, p. 419. Sandwith, "Pellagra in Egypt." Read at Brit. Med. Assoc. annual meeting in 1898. Reprint, John Bale, 1899. Babes U. Sion. *Die Pellagra*, 1901.

Tuczek of Marburg, "Klinische und anatomische Studien über die Pellagra." Fischer, Berlin, 1893. Good review, in *Annales*, vol. v., (1895), p 187.

to Portugal; to northern and central Italy, especially Lombardy, Emilia, Venetia, and the south of Austria bordering on it; to Roumania and Corfu; and, until recently, to the southwest of France, but it has now died out there. All the affected districts are between 42° and 48° of northern latitude, in Europe, but Sandwith has shown that the disease is prevalent in Egypt as far as Assouan, so that the southern limit is 24°. Dr. Cuthbert Bowen of Barbadoes sent me photographs of erythema of parts exposed to the sun, and an account of symptoms which suggests that it is prevalent in that island; denudation of tongue and mucous membrane of intestine were present, but Thin says the disease was not "sprue." Sandwith states it occurs in India, though it is seldom recognized there, so that it is much more widely spread than was formerly supposed.

Symptoms.—The symptoms, which are referable to the nervous system, alimentary canal, and the skin, almost always begin in the spring, with weakness, lassitude, giddiness, headache, articular pain, severe burning sensation in the back radiating thence to the limbs, especially the hands and feet; the tongue is furred, the epigastrium tense and painful, and the bowels are loose, sometimes with slight jaundice. The skin is the last region affected, and is limited to the parts exposed to the sun, viz., the backs of the hands, forearms, and elbows, the face and neck in women and children whose faces are much exposed, and, when the person goes barefooted, the dorsum of the feet also, and occasionally the back and chest, being attacked in the above order.

The distribution, says Paul Raymond, is very definite, as a rule, only on the back of the hand, not extending beyond the first interphalangeal articulation till late in the disease, and above, not beyond the back of the wrist, the forearm being only occasionally affected. Sandwith's Egyptian experience differs from this, the forearms and elbows being frequently involved. On the foot it only involves the upper half of the dorsum from the level of the malleoli, and only the front of the neck down to the first piece of the sternum, seldom the nucha. The erythema often develops suddenly within twenty-four hours, and lasts from ten to eighteen days. It consists of diffuse, bright, dark, or livid red erythema, which disappears on pressure unless the congestion is so severe as to be hemorrhagic, for petechiæ are

common, and there may be bullæ in rare instances also, which either dry up or rupture, or leave indolent erosions; the skin is swollen, tense, and burns or itches, especially the latter in the sun. In about a fortnight the erythema subsides, becoming dark in the center and laminaceous, seldom furfuraceous, desquamation follows, leaving the skin beneath still thickened and more or less pigmented of a café au lait tint, or even sepia or dull brown; ephelides are also common. The thickening and pigmentation increase after each attack up to four or five years, when atrophy sets in. Then the skin dries, wrinkles, and withers like that of cachectic old age, and is so thin and lax that it can be pinched up as easily as it was difficult before. The nails and hair are unaffected. The skin manifestations thus present three stages: (1) congestion; (2) thickening and pigmentation; (3) atrophic thinning.

To return to the general course:

After lasting up to July or August the symptoms decline, and the patient seems quite well in the winter, but in the next spring all the symptoms reappear, either with the same or greater severity, though sometimes the aggravation does not show itself until the third attack or later, when the patient is too weak to stand, emaciates, suffers from severe pains in the head and back, with tenderness near the dorsal vertebræ. Insomnia is frequent; the third nerve is paralyzed more or less, and in four out of five cases there are changes in the fundus oculi also. Sandwith found the knee jerks increased in the early stage, sometimes very marked, and at the late stage diminished and sometimes absent. Ankle clonus was absent, other reflexes followed the condition of the knee jerks.

Meanwhile the rash may extend all over the body, with the changes already described, and the skin may lose more or less sensibility. The tongue gets denuded of papillæ, red and dry, there is a burning sensation in the mouth, deglutition is painful, painless enlargement of the parotid has been noted by Sandwith, diarrhea increases to profuseness, all the cerebro-spinal symptoms, many of them meningeal, are aggravated, and the patient is delirious, sinks into a typhoid state, and dies.

Mental depression, increasing to insanity, is very common, either in the form of mania, or that melancholia with fear of injury and a tendency to suicide by drowning, all pellagrous

patients liking to see and touch water; or the patient may sink into utter imbecility; in the young it often takes a special form, in which the body and organs of generation are defectively developed, while the mental powers are precocious and active.

Other less common symptoms are epileptiform convulsions, paresis of extensors, paralysis of the whole limbs and bladder, atrophy of the heart, alkaline urine of low specific gravity (1005), but no albumin, with dropsy and colliquative foul sweats, as well as the diarrhea. When the symptoms are not very severe, the disease may last ten or fifteen or even twenty years, but the average duration is five years.

Etiology.—This may be summed up for Europe in the alliteration, Peasant life, Poverty, and Polenta, plus sun exposure as an exciting cause. Women suffer most and children least frequently, the commonest age being from thirty to fifty. In Egypt men are most affected, as they work most in the fields, and though maize is the staple food in Lower Egypt, they do not make it into polenta. In Upper Egypt, where millet is eaten, pellagra does not occur. It is a disease of the country, being only seen occasionally in towns, among the poorest and most exposed to the weather. The disease occurs almost exclusively (ninety per cent.) among the poorest peasants of the districts affected; but though it is predisposed to, and aggravated by poverty and bad hygiene generally, the immediate cause is the toxic influence analogous to ergotism, produced by eating decomposed or fermented maize, during which, as Lombroso's experiments show, a fatty oil (maize oil) and an extractive "pellagrozein" are produced, and the administration of these to men and animals excites pellagrous symptoms in them. The disease is not contagious, and is doubtfully hereditary, since both parents and children are subjected to the same influence. Sporadic cases are said to occur in France far away from the pellagrous districts, and it has been suggested that possibly other grains, such as oats, may undergo similar changes and produce similar effects. These are really, however, cases of what Roussel called pseudo-pellagra, which present to some extent analogous symptoms. They occur in chronic alcoholism with peripheral neuritis, and in asylums amongst the demented and general paralytics. Leudet believes that there is a pseudo-

pellagra connected with poverty, but if so the disease ought to be universal.

Pathology.—Lombroso infers, on good grounds, that it is due to a toxic effect on the cerebro-spinal nervous system, and Ferrati's * observations go to prove that the toxins are derived from mold fungi, and not from bacteria.

The morbid anatomy shows four classes of changes:

1. Hyperemias and inflammatory processes, leading to exudation, etc., in the brain and cord membranes, liver, spleen, kidneys, and lower part of the intestines.

2. Atrophy and marasmus of the viscera supplied by the vagus, viz., the heart (brown atrophy), lungs, kidneys, spleen, and intestine, the muscular coat of the latter being much thinned. In the Barbadoes cases the mucous membrane was denuded.

3. Fatty degeneration of the kidneys, liver, myocardium, and of the vessels and cells of the spinal cord.

4. Pigmentary degeneration of the cells of the brain, cord, liver, kidneys, and heart. The skin also is atrophied and pigmented and often sclerosed, signs of senility in short. Vollmer lays stress on the horny metamorphosis of the rete.

5. Special Cord Changes.—Primary lateral sclerosis in the dorsal region only; marked degeneration of the column of Goll in the median portion, except a small group of fibers immediately behind the gray commissure. Tuczek also found these changes, but says the posterior roots escape, while Lombroso found Burdach's column and the posterior roots sometimes involved. Unlike locomotor ataxy the lesion is seldom below the dorsal region, and Lissauer's tract and Clark's column are unaffected. Pellagra lesions therefore resemble those of general paralysis. In Egypt the post-mortem changes are complicated by the frequent presence of ankylostoma, bilbaria, and other parasites, and dysentery is not uncommon towards the end.

Déjerine † found parenchymatous neuritis of the cutaneous nerves, but this was a case of pseudo-pellagra in a chronic alcoholic. P. Raymond could find none in a true pellagrous patient with atrophic skin.

* Abs. in *Lancet*, October 13, 1900, p. 1085.

† *Ann. de Derm. et de Syph.*, vol. ii. (1881), p. 719.

Diagnosis.—This would turn on the position of the patient, exposing him to the influence of diseased maize or other cereal, the triad group of symptoms, depression, diarrhea, and dermatitis, the denuded tongue, tenderness of spinal nerves, the erythema being on exposed parts, and the general course of the disease. In pseudo-pellagra the erythema is present, but the other special symptoms and etiological conditions are absent. In alcoholic cases there would also be the symptoms of alcoholism, including peripheral neuritis as a rule, but in a case of Dubreuilh's it was absent.

Prognosis.—This is only favorable if the attacks are of slight intensity, or if there has been not more than one previous attack, and the patient can be placed under favorable conditions. In other cases the outlook is very bad, and the nervous system, even at the best, is apt to be permanently damaged.

Treatment.—Lombroso recommends for prophylaxis the better storing and gathering of the maize, so as to keep it dry * and avoid fermentative changes. Subsequently, when the disease has developed, removal into good surroundings, good feeding, and treating the patient according to circumstances; opium is recommended when there is fear or stupor; quinine in prostration; calomel, arnica, and cold douches for diarrhea; but of all remedies, arsenic is the most effectual; 1-2 to 2 minims of liquor arsenicalis should be given daily; in infants, friction with chlorid of sodium is beneficial.

Acrodynia or **Epidemic Erythema**† is a disease closely allied to pellagra and ergotism, which occurred first in Paris and some other French towns as an extensive epidemic in 1828 to 1830 and 1831, and has since been observed on a small scale chiefly among Belgian and French soldiers and prisoners; the last occasions being among the Mexican and Algerian soldiers in Mexico in 1866, and in one French regiment near Versailles in 1874.

Symptoms.—The symptoms are those of gastro-intestinal irritation, redness of the conjunctiva, edema of the face, soon followed by formication, pricking pains in the palms and soles, and

* In Italy a kind of drying oven is supplied to the peasants by charity, and has been found to be a great aid in preventing the disease.

† Hirsch, *loc. cit.*, vol. ii. p. 248, contains the best account, of which the above is an abstract. Also Alibert, "Monographe des Dermatoses," 2d ed., 1833, p. 12.

a burning sensation, with, at first, hyperesthesia of those parts, especially the feet, and later on, anesthesia; then an erythematous eruption breaks out, preceded by bullæ, according to Alibert, chiefly on the hands and feet, but it may spread over the limbs and parts of the trunk, followed by exfoliation and dark-brown or black pigmentation, greatest in the warm regions of the body. In severe cases the limbs waste, become edematous, and there may be cramps, pareses, and toxic spasms. There is no fever, and it is seldom fatal except in the old and feeble, or occasionally from diarrhea; otherwise there is more or less complete recovery in a few weeks or months. There are no special post-mortem changes, and the pathology is obscure, but probably it is due to some defect in food, such as altered cereals, though this hypothesis lacks proof.

URTICARIA.

Deriv.—*Urtica*, a nettle.

Synonyms.—Nettle-rash; Cnidosis; *Fr.*, Urticaire; *Ger.*, Nesselsucht; Nesselausschlag.

Definition.—An eruption consisting of rapidly formed evanescent wheals, accompanied by burning and tingling.

Urticaria is a common disease, probably much more so than statistics would suggest (44 per 1000). There are four principal varieties—U. acuta, U. chronica, U. papulosa, and U. pigmentosa; the last differs so much from the others that it is considered separately. There are several subvarieties, the most important of which are U. tuberosa, U. bullosa, U. hæmorrhagica, U. factitia, and circumscribed edema.

Symptoms.—In an ordinary case the eruption comes out suddenly, either without any warning or preceded by burning and tingling of the skin, and sometimes by febrile symptoms.

The lesions consist of firm, circumscribed, flatly convex elevations of the skin, from a quarter to one inch in diameter, the general run being about the size of the finger-nail; they are at first red, and, as they develop, become white in the center, and only the border is red, or they may stop short at the red stage. In short, as their name indicates, they are exactly like the

lesions produced by the nettle, urtica urens, and are called pomphi or wheals.

Their formation and presence are attended with burning, tingling, and itching, sometimes slight, but usually so severe as to oblige the victim to scratch vigorously, the temporary relief thus obtained being purchased at the price of a greater liability to the formation of fresh wheals, which develop in a few minutes, last from an hour to a day, or even several days, and then disappear, without desquamation or other sign of their presence.

The eruption is never symmetrical, the wheals have no definite arrangement, vary from one or two to sufficient to cover more or less completely the whole body, including the mucous membranes of the mouth, tongue, pharynx, and inferably other mucosæ, such as those of the air passages and stomach, dyspnea of spasmodic asthma type and vomiting having sometimes been associated with the skin eruption. Leube noticed it along with temporary albuminuria, and Gruss* relates a case in which acute orbital retrobulbar edema produced proptosis, and was associated with alarming cerebral symptoms.

Variations.—Most of the subvarieties depend on the size, contents, and duration of the wheals, and a few on other considerations. The wheals may be very small, about one-eighth of an inch **(U. papulosa)**, or they may be unusually large, as big as a walnut, hen's egg, or even larger (**U. tuberosa**, **U. gigans**,† Milton); these lesions are firmer and more persistent than usual, are few in number, and occur mainly in broken-down constitutions beyond the middle age. When the tissues of the affected area are lax, there is often much edematous swelling **(U. œdematosa)**; this is well seen on the face, where the eyes may be quite closed; the wheals here, too, generally remain pink throughout; the tongue may be so swollen as to threaten suffocation, but the swelling goes down in a few hours, and incisions are rarely necessary. A variety of this is the so-

* In a discussion on Riehl's paper on "Circumscribed Edema" at Imp. Soc. Phys. of Vienna, reported in *N. Y. Med. Jour.*, 1887, p. 268.

† Milton published a monograph on "Giant Urticaria" in 1878, in which he gives three cases. Juler relates one in *Cincinnati Lancet and Observer*, 1878; and Wilson one, 6th ed., p. 266. I have met with several cases. In one, a man æt. forty-four, a broken-down publican, the wheals were sometimes as large as a goose's egg. He was also subject to diffuse swelling occupying nearly the whole anterior surface of the thighs.

called **Quincke's disease**, or, **acute circumscribed or wandering edema**, in which the orbital tissue or that of other parts of the face may swell up into a large tumor, or there may be a large ill-defined swelling of a great portion of the limb or other part of the body from subcutaneous edema. In these giant and diffuse forms, which seldom attack the trunk, itching is usually absent, but there may be burning and tension of the affected skin. Occasionally the subjective symptoms are present, but the wheals do not appear; this is the **U. subcutanea** of Willan; it is generally limited to the loins and thighs.

Hemorrhage may occur into the wheals (**U. hæmorrhagica**, or **purpura urticans**), and when the mucous membranes are affected may give rise to copious hemorrhage. Thus, Pringle * records a case of a gentleman of fifty, who had repeated attacks of alarmingly severe hematemesis, associated with outbreaks of urticaria of the body and visible mucous membranes; after two smart attacks of gout, the hemorrhage and urticaria, which was never hemorrhagic on the skin, diminished in severity, and became more amenable to treatment with subcutaneous injections of morphia and ergotin. In a boy of nine, under Murchison with U. tuberosa et hæmorrhagica, there was hemorrhage from the bowels, kidneys, and urinary passages, and much uric acid in the urine. (See also Erythema hæmorrhagicum.) Mackenzie met with a case of a boy of two who had a broad band of it round the abdomen after eating fried fish.

When the serum which produces the wheal is more abundant than usual it may force its way up through the rete, and elevate the upper layers to a vesicle or bulla (**U. bullosa**). It is most frequent in children, and in one of my cases the contents became turbid, the bulla burst and left scars; but it is a much rarer event than might be supposed. I have seen it simulate chicken-pox. Probably many of the recorded cases in adults were dermatitis herpetiformis, with which urticaria has close affinities; probably also crescentic urticaria is a form of hydroa. In one of my

* *Clin. Soc. Trans.*, vol. xviii. p. 143. In the *Lancet*, June 14, 1890, Wills relates two cases, one fatal. It was probably really a case of peliosis rheumatica. Chittenden's case was very like Pringle's. *Brit. Jour. Derm.*, vol. x., 1898, p. 158. C. S. Hawkes relates an extraordinary case in a child of twenty-one months in which its life was endangered. Abs. in *Lancet*, June 16, 1900, p. 1740.

cases, a man æt. twenty-eight, it began in rings the size of a shilling, which enlarged considerably on the palms, soles, and back of the hands. On the limbs and trunk were ordinary wheals, which also enlarged, and there was U. factitia.

U. Papulosa. This is the form in which urticaria generally presents itself in children, and is the "**lichen urticatus**" of Bateman. It is due, doubtless, to the tissues of the child being more ready to resent irritation than those of adults. And, instead of there being merely serous, there is actual inflammatory effusion into the papillæ, so that a papule is left after the wheal has disappeared. As usually seen by the practitioner, it is evidently an extremely pruritic eruption, suggestive of scabies, consisting of inflammatory pale red papules the size of a hemp seed, with scabbed tops. It is generally most abundant in an infant, about the loins and buttocks, but may be in any part which the child can reach to scratch. When present on the hands, the resemblance to scabies is very close. Irregular flat scabbed pustular lesions (ecthyma) are often interspersed among the papules, and it is for this, frequently, that the child is brought; the wheals are often not present when seen by the doctor, and the mother generally says nothing about them unless they are inquired for. If they should happen to be present, they are often pink instead of white, and may be either of the ordinary size or very small, and sometimes are linear in the direction of the scratching. It is an extremely obstinate eruption, always worse in the summer. Hutchinson considers this disease to be entirely due to flea and bug bites and the like, in the first instance. I am convinced this is far too narrow a view, and that, though true of many cases, among the poor especially, irritation of the alimentary canal plays quite as, or even more, important a *rôle* in children than in adults, to say nothing of the other recognized causes of urticaria.

Colcott Fox,* in an elaborate clinical essay on this subject, says truly enough that vesicles or pustules may be present in addition to the papules; but he is, I think, certainly mistaken in supposing that the papular, papulo-vesicular or pustular, or even bullous eruptions, which I have described in connection

*"Urticaria in Infancy and Childhood," *Brit. Jour. Derm.*, May and June, 1890.

with vaccination (see Vaccination Rashes) are only forms of lichen urticatus, though, of course, I admit that urticaria is sometimes a sequel both of varicella and vaccination.

It is a moot point as to whether some cases of U. papulosa do not develop into prurigo (see that disease).

U. Factitia exists where, owing to the excessive irritability of the cutaneous nerves, wheals can be excited by local irritation. This is the "dermographism" and "autographism" of fanciful writers. Letters can be inscribed with the finger nails or a pointed * instrument, and in a minute or two the white letters with pink borders stand out in bold relief on the skin; this condition can be produced even when the patient is under chloroform (Caspary). The artificial wheals last from a few minutes to several hours, in rare cases eight to forty-eight (Barthélemy), but as a precursor of sclerodermia diffusa much longer duration has been reached. Bettmann † records that in a man æt. thirty-nine it took several minutes to appear, and then remained unaltered for five or six days. The liability to it is also often very persistent, and may be associated with other forms. In fact, in most cases, at least a minor degree of it is present, and may sometimes be of diagnostic assistance. In the slightest form there is only redness without white elevation, in the line of the scratch like a *tache cérébrale*. On the other hand Barthélemy ‡ records a unique case in which white elevations without red borders were produced by scratching. It developed on what he called a "nevrotoxidermite" of erythematous character accompanied by intense irritation. In a case of Fabry's,§ a woman of sixty-three, hemorrhage instantly ensued into the wheals, and remained for weeks after the subsidence of the wheal. The

* Féréol met with a man who procured his admission to different hospitals by imitating the measles, scarlatina, or variola eruption by varying the instrument of irritation.

† Bettmann, *Berl. klin. Woch.*, April 8, 1901. Abs. in *Brit. Med. Jour. Suppl.*, April 27, 1901, p. 65.

‡ P. 123 of "Dermographisme," Paris, 1893, an illustrated monograph of 287 pages, copious literature, numerous cases, and an interesting history of the disease in the Middle Ages, when pseudo-miracles were worked on the patients by the priests.

§ *Archiv. f. Derm. u. Syph.*, vol. liv. (1900), p. 111. Abs. *Amer. Jour. Cut. Dis.*, vol. xix. (1901), p. 112.

tongue was permanently swollen and protruded. Mouatt-Biggs * showed to the Clinical Society a very extreme case of the ordinary form, which appeared to have existed since birth. The patient was a noted athlete, æt. twenty-two, and showed no sign of nervous or arthritic diathesis, which Barthélemy thinks is the fundamental origin of the affection. In this case the hair follicles were so prominent and dilated that a fine wire could be introduced into them. The local temperature was raised, but there was no itching or ordinary urticaria. The lines traced reached their highest development in five minutes, remained at their height ten minutes, and disappeared in thirty to forty minutes. In a case of Thomsen's disease a pin prick produced a large wheal round the seat of puncture. The condition is not infrequent in locomotor ataxy, and in syringo-myelia.

Confluent urticaria is U. conferta, and such terms as "ephemera" and "evanida" refer to the short duration of the wheals, and "perstans" when they last longer, with more hyperemia than usual; it has, however, been used by some authors for U. chronica. Except U. perstans these terms are superfluous and have fallen into disuse. In rare instances urticaria is distributed unilaterally. Thus in Róna's case, a girl of eighteen with acute rheumatism and endocarditis had left-sided urticaria and chorea, and in Mackenzie's case the distribution was over the left arm from the scapula to the wrist and confined to definite nerve tracts. Urticarial wheals present no definite grouping as a rule, but in one of my cases, a boy æt. eleven, who had marked febrile symptoms from toxin absorption from scybala, broke out all over with corymbose groups of pea-sized wheals, followed the next day by a morbilliform rash. Urticaria may also be confined to a small area. In a man æt. thirty-four I saw it limited to the palms, and it is often limited to the limbs, and in rare cases to a mucous membrane, *e. g.*, tongue, larynx, etc.†

U. Acuta is often, though not always, an U. febrilis; when it is, the temperature may be raised 3° to 5° F. The pulse is quick, and there are marked signs of gastric irritation, nausea, vomiting, weight and pain at the epigastrium, furred tongue, pain in the head, and prostration. The eruption may not appear for a

* *Clin. Soc. Trans.*, vol. xxxii. (1899), p. 259.

† Private note book G. 818.

day or two, and then comes out copiously all over; the gastric symptoms are temporarily relieved, the skin and gastric symptoms alternating for some days; such cases are generally traceable to a definite cause, and when they are due to irritating ingesta, whether of food, medicines, etc., the eruption may follow the ingestion of the peccant material very rapidly, even while it is being eaten. When this is got rid of the urticaria rapidly disappears, but the gastric mucosa may be left in a very irritable condition, and many cases are probably due to auto-toxins.

U. Chronica refers to the duration of the disease as a whole; the wheals come out acutely, and only remain a short time, but others form at either long or short intervals, and in some instances the interval is a regular one. Willan and Wilson both refer to cases of this type where there were outbreaks once every week; it is also seen in ague occasionally, but not following the intermittent course of the fever. The eruption is rarely so extensive as in the acute forms, and there is less likelihood of there being general disturbance. The disease may last for an indefinite time, and though always relievable, is generally curable only with difficulty and perseverance.

Urticaria perstans.*—While the transitory character of the lesions is the most striking and characteristic feature of the vast majority of cases, there are not a few in which either ordinary wheals remain longer than usual, or, while wheal-like in some respects, they differ in others and stay for days, weeks, or months, or there may be ordinary wheals which either develop into, or are followed by, lesions so different in character that their urticarial nature will be unperceived, unless their development has been observed, or that ordinary wheals develop from time to time as well as the persistent lesions, or unless urticaria can be factitiously produced by a scratch, to which the chronic lesion also responds by becoming hyperemic and more prominent. The most familiar secondary lesion is the persistent papule left by the wheals in children as already described under U. Papulosa. Hemorrhage into a wheal and simple pigmenta-

* The author drew attention to these cases in a paper, "Urticaria with Persistent Lesions," in the International Congress at Rome in 1894, p. 34 of *Trans.*, relating several interesting personal and other cases.

tion following ordinary urticaria are also examples of secondary lesions, but more striking and important are the nodular lesions of infantile urticaria pigmentosa, to be described separately. There remain some rare cases, difficult to classify, which require brief mention.

A Turkish bath attendant, æt. fifty-four, came to U. C. H. with about a dozen lesions on each side of the chest and nowhere else. When they first came out they itched, were white in the center, and round and prominent like a wheal, and then in a few days they settled down into flat infiltrations from a split pea to over an inch in diameter, firm to the touch, not sharply defined, and of a slightly livid red color and no itching. They remained thus for weeks or months, and then disappeared in four days from the beginning of involution. They had been present as a whole for a year and a half. In another case a woman, æt. thirty-two, had similar lesions, except that some were hemorrhagic, and persisted for weeks on the legs and arms.

In a case of Morrant Baker's,* which he called **U. perstans tuberosa**, the patient, who had suffered from the disease for two years, had factitious urticaria, and in addition, persistent mottled yellow and red tubercles, affecting the whole of the ears, the knuckles, and elbows; they were said to have begun just like the wheals, and some had disappeared while others had come out. They were very tender, and one over a knuckle had ulcerated.

A lady, æt. thirty-five, was brought to me by Raymond Johnson, with firm, solid tumors, some as large as a large gooseberry, which slowly formed (one six weeks) and then equally slowly disappeared. They were so like tumors that the question of excision had arisen. Urticaria factitia was present.

At the Dermatological Society, October 14, 1891, Morrant Baker † showed a young woman, æt. twenty-four, who for the last year had a disease consisting of pea- to bean-sized, convex, pale purplish-red, firm nodules, rough to the touch like flat warts. **(U. perstans verrucosa).** They had come out in small numbers at a time; but as each one persisted, when presented to the Society, they were pretty numerous on the limbs, more on the extensor than the flexor surface. She believed none ever

* *Med. Chir. Trans.*, vol. lxiv. (1881), with colored plate.

† A wax model of this case is in the College of Surgeons' Museum, No. 16 of Dermatological Series.

went away. They itched severely both during and after development. An early one, on the back of the hand, was of a brighter red and rather more acutely conical, and in the center was a horny dot formed round a follicle. Whilst under examination she scratched her forearm, and a distinct small wheal appeared. The general health was good. A verrucose case of this type was published by Kreibich * and others by J. V. Hielemann, and Johnston.

In Penrose's case,† a child of two, the eruption followed measles, and some of the lesions lasted for months, one ten months, and was the size of half a crown, but most were from a hempseed to a shilling. They were red, smooth, firm, and deep-seated in rings and patches of hard nodules, and they did not itch much, and all but the oldest disappeared in nine months. These are only specimens of cases of which other varieties are scattered through dermatological literature.

In rare instances the wheal may be limited to an appendage of the skin. Thus, under the name of urticarial acne, Löwenbach ‡ relates a case where the pilo-sebaceous apparatus was primarily involved. Intense itching preceded the appearance of firm pale red wheals from one-eighth to one-sixth of an inch across, which enlarged peripherally to one-fourth or one-half an inch and later underwent central disintegration and left a white cicatrix like that of acne varioliformis. The whole process lasted from four to six days. The affection developed after an attack of scabies cured by Peruvian balsam.

Etiology.—No difference in age or sex brings immunity from urticaria, but it is more common in the female sex and in infants and children, in the latter mainly in the papular form, but U. bullosa is also more common in children; it is also more common in the summer months.

Foremost amongst the causes of urticaria in all forms is irritation of the alimentary canal, but the causes are so numerous that they must be classified into, first, direct or local irritation of the skin, and, second, indirect or reflex irritation.

* *Arch. f. Derm. u. Syph.*, vol. xlviii. (1899), p. 165, colored illustrations and micro. section. Hielemann's case is quoted by *American Medical Bulletin* for May, 1900. Johnston's in *Trans. Amer. Derm. Assoc.*, 1898.

† *Brit. Jour. Derm.*, vol. v. (1893), p. 210.

‡ *Archiv. f. Derm. u. Syph.*, xlix. (1899), p. 29. Full abs. in *Annales*, vol. x. (1899), p. 1108.

Under *direct or local irritants* come the common stinging-nettle, contact with medusæ or jelly-fish, insect bites, *e. g.*, of fleas, bugs, mosquitoes, bee or wasp stings, some kinds of caterpillar crawling over the skin, violent scratching from any cause, *e. g.*, scabies or prurigo, and, occasionally, galvanic currents to the skin, poultices, etc.; sudden alternations of temperature, leading to chills, are also apt to produce it, much more frequently, I am convinced, than is usually supposed. De Argaez reports a case of a rheumatic woman who sat in a draught while perspiring, and an urticaria of the whole body ensued. In my own person a cold bath following immediately on a hot one produced general urticaria before I was dry. Direct exposure to intense sun-heat has also produced it, but this is rare.

Indirect Irritation acts chiefly through the alimentary canal, which may be either healthy or unhealthy at the time.

(*a*) Food, even articles not usually considered injurious, may excite it, but the more frequent are shell-fish, especially mussels * and crabs; some kinds of meat, especially pork and sausages; fruit, such as nuts, almonds, and strawberries; fungi, *e. g.*, mushrooms; branny food, such as porridge or oatmeal in other forms, etc.

(*b*) Medicines of many kinds, especially copaiba, cubebs, quinine, mercury even by inunction or subcutaneous injection, morphia, turpentine, salicylic acid, valerian, chloral, etc.; some consider that the occurrence of urticaria in ague is really due to the quinine given for the ague. Certain odors may excite it.

(*c*) Worms are a common cause in children, but the main cause in them is chronic intestinal catarrh, commencing often in early infancy, and from want of efficient treatment persisting for years. The absorption of hydatid fluid, whether from spontaneous rupture, puncture by trocar, or electrolysis, has repeatedly produced urticaria; that it is not a reflex phenomenon, as Graham thought, was proved by Debove, who produced it by the subcutaneous injection of some hydatid fluid. Urticaria has also followed tapping an ordinary pleuritic effusion. A violent outbreak of urticaria has in a few cases preceded the

* Schmidtmann found a ptomain he called "mytilotoxin" exclusively in mussels taken from impure stagnant water, and there is reason to believe that it is the product of a bacillus, cultivations of which proved fatal to animals.

exit of a guinea worm (Duke, Winze, Sutherland, etc.). Probably both are examples of toxin absorption. Auto-toxins are probably frequent causes, but seldom demonstrable. Diphtheria and plague antitoxins, also, have produced urticaria.

Langubuch, confirmed by Brieger, says that a living hydatid cyst contains a poison or ptomain, the quantity being in proportion to the activity of development of the cyst and daughter cysts. Succinate of soda is also found in hydatid fluid, and is another suggested cause of the eruption.

In most of the other above instances there is a predisposing idiosyncrasy on the part of the patient, and most of them come under U. ab ingestis, as it is sometimes called, and refer to acute attacks. An extreme instance of predisposition is related by Buret. A man had urticaria of feet or hands whenever he washed them in cold water, while a flea drove him mad with wheals the size of a five-franc piece. In chronic urticaria, though many of the above agents will excite an attack, there is often defective digestion habitually present. The gouty diathesis is a predisposing cause, probably by its association with acid dyspepsia; indeed, dyspepsia, however induced, is one of the commonest factors. Others are:

Disorders in other organs, e. g., the uterus and ovaries, both functional and organic. Some women have urticaria just before each period, others have it at each pregnancy, others again during lactation. Leeches to the os, passing a sound, etc., are examples of direct irritation to the uterus causing urticaria.

It is associated with many spasmodic conditions, *e. g.*, asthma and gallstone colic; it is also seen in diseases of the nervous system, such as neuralgia, locomotor ataxy, and emotional conditions; thus I know of a lady in whom the advent of strangers produced urticaria, and this sensitiveness increased, until a knock or ring at the front door would determine an immediate outbreak; Alibert gives several analogous instances. Where bile is free in the circulation, as in jaundice, it is frequent; and in conditions short of actual jaundice, such as lithemia; it is not unusual in albuminuria and glycosuria also; and it has been found in association with rheumatism, purpura, and intermittent fever; in the latter case, it is often controllable by quinine. It is often difficult, especially in U. chronica, to ascertain the original cause, as it may date far back, and have rendered the

vaso-motor system so irritable that the most apparently trivial conditions will lead to it; and the mental attitude of the patient towards those conditions which he knows will produce it is not unimportant.

Pathology.—Everything in urticaria points to its being primarily a vaso-motor disturbance, direct or reflex, central or peripheral. The course of events is probably this: a spasmodic contraction is followed by a paralytic dilatation of the vessels, and stasis or retardation of the circulation in the papillary layer. Serous exudation then ensues, producing acute edema, which lifts up the epidermis into a wheal; this is pink at first, but as the fluid increases the blood is pressed out at the center, which becomes white, while the periphery is all the more hyperemic.

The arrectores pili are often excited to strong contraction, as in the instance of extreme U. factitia already related, and occasionally the wheal is limited to the hair follicle.

It is supposed by many that the muscles of the skin, by their contraction, limit the edema and increase the prominence of the wheal.

Philippson * disputes the vaso-motor view, and believes with Heidenhain that a secretory action of the vascular endothelium is involved, and that the process is a mild inflammation from a feeble toxin action.

Anatomy.—Vidal † excised a wheal during life, and found the "superficial and deep network of vessels dilated and gorged with blood without any alteration of their walls. Both the blood-vessels and lymphatics were surrounded by leukocytes, which were also scattered through the whole thickness of the cutis and massed together at certain points. A few were to be seen between the cells in the deepest layer of the epidermis. Here this structure was normal, but another piece of skin was excised from a wheal in which the epidermis had been raised into a vesicle. This vesicle contained a sero-albuminous fluid and the *débris* of epithelial cells. In the middle layers the cells were vesicular, and those of the deeper layer granular. Leukocytes migrating among the cells in the deep layer of the epidermis were more numerous than in the other case." Neumann found a local edema and ischemia in a wheal produced on a rabbit with a stinging-nettle. Unna also has examined

* "Experimental Researches on Urticaria." Philippson, *Giorn. Ital. d. Mal. Ven. e d. Pelle*, 1899, p. 675. Abs. *Brit. Jour. Derm.*, vol. xii. (1900), p. 217.

† *L'Union Médicale*, February 24, 1880; quoted in *Lancet*, vol. i. (1880), p. 537.

a wheal, and found edema of the lower layers of the cutis, forming fissures and loculi in the lymph vessels and spaces; he thinks the wheal is produced by a spasm of the large veins of the skin, which normally serve to carry off the lymph.

Leredde * examined the blood in two acute urticarias and one chronic one with acute attacks. He found polynucleosis, during the attack, only with leukocytosis. As the urticaria subsided, so did the polynucleosis, and in one case was followed by eosinophilia. Lazarus also found sixty per cent. of eosinophiles, and Leredde suggests that this examination was made as the attack was passing off. These observations, while requiring further research, suggest, Leredde thinks, that urticaria may be connected with an undue sensitiveness of the hemapoietic, rather than of the nervous system.

Wright † finds that there is deficient blood coagulability in those liable to urticaria, and that this conduces to "serous hemorrhage," and gave twenty-grain doses of chlorid of calcium three times a day as a corrective successfully in two cases.

Gilchrist ‡ found an excess of indican in some cases of urticaria, but he did not state whether constipation was present in those cases—a condition in which it is usually increased.

Diagnosis.—The sudden evolution and transitory duration of white or pink, itching or tingling elevations, or wheals, are quite characteristic, and even when there is no eruption when the patient is seen, an eruption which comes and goes at short intervals can scarcely be anything but urticaria.

The eruptions most like urticaria are those of *erythema papulatum* or *tuberculatum*, which may resemble pink wheals; but the erythema is symmetrical, and seldom itches severely, and the lesions often enlarge peripherally, and in these points it differs from urticaria.

Similar considerations would distinguish *erythema nodosum* from U. tuberosa; moreover, the tumors of E. nodosum are very tender.

U. papulosa is very like *scabies* in its general aspect, but there are none of the characteristic burrows, and the eruption is not between the fingers, and often not on the other favorite seats

* *Annales de Derm.*, etc., vol. x. (1899), p. 403.
† *Brit. Jour. Derm.*, vol viii. (1896), p. 82.
‡ *Trans. Amer. Derm. Assoc.*, 1899.

of scabies. It must, however, be borne in mind that the two may be associated, and that scabies may lead to urticaria; a history of urticaria is not enough, therefore, as it may be only secondary. Quite as often the urticarial element is overlooked, and it is only on inquiry that it is found that "the child comes out in bumps," or "water blisters," as if it had been stung by a nettle.

The erythema stage of *dermatitis herpetiformis* might easily be mistaken for it; the crescentic arrangement of the lesions, which are always pink, their independence of ingesta, and the fact that vesicles or bullæ develop sooner or later as the rule, while in urticaria they are exceptional, would guide to a correct decision.

Prognosis.—Acute urticaria usually gets well in a few days or less, but some cases, if untreated, go on into the chronic form.

The chronic form depends largely on the possibility of removing or avoiding the cause or causes.

The papular urticaria of children is often a very obstinate affection, even when it seems to be well in winter, breaking out again when the warm weather sets in. I believe, however, that all cases are curable, if the parents will be sufficiently watchful against exciting causes, and will persevere long enough with remedial, and above all with preventive, measures.

Treatment.—An acute attack, due to irritating ingesta, is best treated by an emetic if seen sufficiently early, and at a later period, saline aperients, such as sulphate and carbonate of magnesia (Mixtures, F. 1, 2, or 3).

These measures are often sufficient, but where any gastric irritation remains care must be taken lest it lapses into the chronic form; bland and unirritating articles of diet, an effervescing soda mixture, or mixture of bismuth (Mixtures, F. 10), would be the line to follow.

For the successful treatment of chronic urticaria, the study of the etiology is the most important preliminary. This comprises not only the original cause, which may or may not be operative when the patient comes under observation, but also exciting causes of fresh outbreaks. Most careful inquiry into the habits of the patient, and the conditions under which the eruption comes out, should be made, the urine examined, and investigation of every organ and its functions may be required. In the vast majority of cases, however, it is with the alimentary canal

that we have most to do. The diet should be carefully regulated; fermentable articles, such as pastry, highly seasoned or sugared foods, beer, etc., avoided; alcohol should be very sparingly taken, if at all; pure, well-diluted spirits are the least injurious, and perhaps claret may be permitted; the patient should be instructed to notice if any special article of diet or other circumstance leads to the outbreak. The bowels must be carefully regulated; an aloes, belladonna, and nux vomica pill every night is often most useful (Pills, F. 1 or 2), with occasional salines, such as Carlsbad Sprudel salt, or seidlitz powders; or alkalies with bitters, such as carbonate of soda and calumba; or bismuth nitrate and nux vomica (Mixtures, F. 8 to 10). Intestinal antiseptics often afford most valuable assistance. I cured a case of fifteen years' duration by persevering treatment in this direction.

The gouty diathesis is a frequent offender; alkalies, with the other measures for that condition, may be needed. Diuretics are often required, and act most beneficially in some cases (Mixtures, F. 7). And yet, with every care, and when all the functions are duly performed, there are cases in which the eruption will continually recur. It is then that we must seek the help of those narcotics which act on the vaso-motor centers, such as the tincture of belladonna, in full and increasing doses; or, better, sulphate of atrophia, 1-150 grain cautiously increased, or pilocarpin 1-8 of a grain may be daily injected subcutaneously. Antipyrin or antifebrin in ten-grain doses will often cut short an actual outbreak, and is sometimes curative. It is often a good plan to give one or two tabloids a couple of hours before an anticipated attack, outbreaks in some patients recurring with something like punctuality. Phenacetin and trional are alternative drugs. Chlorid of calcium was recommended by Wright,* as already mentioned under Pathology, at first thirty grains twice or thrice a day, then twenty, and then ten. I tried it in a few cases, but without success, and in one or two the eruption came out more abundantly. In obstinate cases further trial might be made, but most cases yield to treatment on the general lines laid down.

In infantile urticaria from chronic intestinal catarrh diet is of the highest importance; sweets of any sort should be absolutely

* *Lancet*, January 18, 1896, p. 153.

interdicted, and starch cut down as much as possible; therefore no potatoes, toast instead of bread, and milk puddings of rice, etc., or sop, should only be permitted when mixed with maltine. All fruits, especially strawberries, should be avoided, except perhaps baked apples. A fair amount of meat may be allowed to a child two years old or more.

For drugs, bicarbonate of soda and bismuth, with carminatives, salicylate of soda or salol, and sometimes gray powder and pepsin, are the kind of drugs most frequently indicated.

In some of these apparently causeless cases a steady course of arsenic in small doses, long continued, has been most successful in my hands; but it must be given with discrimination, and never when the urticaria is connected with the disorder of the alimentary canal, as it will then only add fuel to the fire. Bromid of potassium has been strongly recommended by McCall Anderson. Quinine in full doses is also successful, both in malarial urticaria and some other cases, but it must be remembered that quinine causes urticaria in a few persons.

Galvanism down the spine cured a case in which it came out in the erect, and disappeared in the recumbent posture. Strophanthus, ichthyol, salicylate of soda, and iodid of potassium also have friends, but it is wiser to depend more on rational carefully planned treatment than on specifics. I believe, however, in salol as an intestinal disinfectant in chronic intestinal catarrh, and in antipyrin to ward off attacks. Much depends upon how far the patient can or will co-operate. Thus, even apart from alcoholic habits, it is almost impossible to cure a cabdriver in cold weather.

Local treatment is very important; the irritation of the nails in scratching has a most injurious effect on the already irritated cutaneous nerves, and yet to tell the patient not to scratch is useless, unless relief is afforded in other ways. One of the most important preventives is the preservation of a uniform temperature.

The clothing and bedding also should be light and absolutely unirritating; at the same time the patient must be guarded against chills. Jacquet demonstrated the importance of this by preventing urticaria entirely in one part of the body by wrapping it in wadding.

The same remedies do for both acute and chronic cases; alka-

line baths, warm but not hot, with or without scalded bran, or starch, sulphid of potassium, or carbolic acid baths, are all useful (Medicated Liquid Baths, F. 1, 2, 6), but they must be used with care, as subsequent exposure to a different temperature will bring on an attack. Some forbid baths on this account.

Dusting freely with flour relieves acute cases. Sponging with vinegar and water, or citric acid in chloroform water, have their advocates, but the best remedies of this class are, I think, the disinfectants. I have tried a large number, and they are all more or less useful. Foremost I would place liq. carb. detergens ʒ ij or ʒ iij to water ℥ viij; sanitas and water equal parts; terebene ℥ j to ℥ viij; salicylic acid, made soluble with glycerin and borax, ʒ ij to ℥ viij; benzoic acid in saturated solution; carbolic acid ʒ j or ʒ ij to ʒ viij; evaporating lotions of spirit and water; or spirit and lead lotion (Antipruritic Lotions, F. 20 to 38); chloral camphor may be painted on, or camphor ball or menthol rubbed on obstinately itching spots. So many are mentioned because, in chronic cases, either they lose their effect after a time, or, what is more likely, the patient loses faith and wants a change, but the first two are my favorites. Acute cases yield most rapidly, and even the chronic urticaria of children may be temporarily held in abeyance by keeping them in bed.

URTICARIA PIGMENTOSA (Sangster).*

Synonym.—Xanthelasmoidea (Fox).

This affection differs from ordinary urticaria in many ways, besides the presence of pigmentation with, or after, the wheals. As already stated, pigmentation occasionally follows ordinary urticaria in adults, and although thus entitled to the above name it would not connote the affection now under consideration, which with very few exceptions commences in early infancy.

* *Literature.*—Author's Atlas, Plate VI., illustrates nodular or xanthelasmoid form. St. Louis Atlas, Plate XLIX., shows the mixed type in an atypical form—*Brit. Med. Jour.*, September 8, 1869; *Clin. Soc. Trans.*, vol. xviii. (1885), p. 12 (case by the author, with analysis of previous cases and colored plate of the mixed form). Colcott Fox's essay in *Med. Chir. Trans.*, vol. lxvi. (1883), p. 329, gives abstracts of all cases up to date and microscopical diagrams. Paul Raymond, "L'Urticaire Pigmentée," "Thèse de Paris," 1888, gives a complete *résumé*—relates fully twenty

The first case on record is Nettleship's (1869), and although there have been probably a hundred cases recorded since his, most of them in Great Britain, it is still a rare disease. I have had eight cases under my care representing the three types of the affection. These are: (1) *The nodular, or xanthelasmoid type*, originally described by Tilbury Fox, which is the rarest form; (2) *the macular*, in which there is only pigmentation, without or with very slight elevation of the lesions, which Sangster brought into notice and gave the title which has been generally accepted for the disease as a whole, though it only fits this phase of it, and (3) *the maculo-nodular, or mixed type*, which from its frequency and its containing all the elementary lesions may be taken as the most representative form and will be considered first.

Symptoms.—The eruption begins in the first six months of life, and is most abundant on the neck and trunk, next upon the limbs, face, and head, and only occasionally on the palms and soles; but no part of the body surface is exempt, and it has been observed on the palatal, buccal, and pharyngeal mucosæ. It commences by the formation of nodules or wheals, which are formed rapidly, often appearing in the course of the night, and are arranged singly, or in groups of three or four. In Hallopeau's case they were in oblique rows in the line of the ribs—a proof, he thought, of a nervous distribution and origin; but, in my opinion, only due to the lines of cleavage in which the blood-vessels run.

At first they are about the size of a small split pea, distinctly and sharply elevated above the general surface, and of a yellowish-red color, with a narrow pink areola; subsequently they increase in size, sometimes by coalescing, and some of them may become of a distinctly yellow or buff color; these, while they resemble a wheal in form, approach a xanthoma nodule in color, but are firmer, and rarely of so bright a yellow. As fresh lesions are forming every few days, there may be seen simultaneously,

nine cases. Doutrelepont, *Archiv. für Derm. u. Syph.*, vol. xxii (1890), p. 311, gives references to several other recent cases besides his own, and reports of cases are now too numerous to specify, but L. Blumer, in *Monatsh. f. prakt. Derm.*, vol. xxxiv., 1902, No. 5, p. 213, gives a large number of references, but he includes some adult cases of pigmentation after urticaria which do not belong to true U. pigmentosa.

in different parts of the body, nodules from the size of a hemp seed to a large bean, and extensive infiltrations, with the color varying from a brownish-red in the recent, up to pale or deep fawn in the older formation. When once the nodules are fully formed and have become yellow they may remain unchanged for a long time, even for years, though after friction or a scratch they usually redden and become more prominent; occasionally, also, bullæ with clear contents form upon them, and dry up in a few days, leaving a thin crust upon the nodules. Other nodules may, after a variable time, shrink and become soft, wrinkled, and ultimately disappear, leaving brownish pigmentation, or, as in Hallopeau's case, white cicatrices. He has also noted cases with scarring due to vesiculo-pustules on the lesions. After a variable period, always several years, fresh nodules are no longer formed, and the old ones are gradually absorbed by the time puberty is reached, if not sooner. In Levinski's case,* however, fresh nodules were still making their appearance at eighteen years of age. In Morrow's it had lasted twenty-two years, and other cases also show its persistence into adult life.

Itching, often severe, usually precedes and may accompany the formation of the nodules, and with this ordinary wheals appear, and factitious urticaria is common, and should always be tried for; ecthyma may appear as another consequence of scratching. In some of these cases the wheals and the bullæ preceded the nodules, but it is probable that the bullæ do not form independently of wheals or nodules.

Variations.—In non-pruritic cases all these secondary lesions are absent. The deep yellow xanthoma-like lesions may also be absent, the eruption consisting entirely of yellowish-red or brownish-red lesions.

In the *Macular* form, while the general symptomatology is the same and wheals appear from time to time, the only permanent lesions are fawn-yellow pigmentary stains on the site of wheals and usually level with the skin, but occasionally slightly raised, permanently or temporarily. In one of my cases the stains were closely set over the whole of the trunk and limbs, the face alone almost escaping. After several years of treatment the wheals ceased to appear and most of the staining faded away.

In the *Nodular* form the permanent lesions are all, or nearly

* Virchow's *Archiv.*, Bd., 88, 1882.

all, firm or yellow and xanthoma-like, as in my Atlas case. They usually begin as dullish red or copper-colored patches, which subsequently become yellow. The majority are from a pea to a bean in size, but may be larger from coalescence, and in Barr's case there were numerous plaques of great size.*

Wallace Beatty † has recorded three cases of urticaria with pigmentation presenting several peculiarities. Two were brothers, æt. twelve and fifteen; the other was a lady, æt. twenty-three. They all had urticaria of the ordinary type, and one boy had also factitious urticaria. Besides the ordinary wheals, extremely irritable red papules, from a quarter of an inch in diameter, appeared in crops, which in a few days flattened down and became brown spots of corresponding area, many of them with a white center; in the case of the boys the brown spots, which were rather larger than those of the lady, ultimately became quite white, smooth, foveated, or with radiating lines on the surface, and firm to the touch and level with the skin, but there was no atrophy of the skin structure, only of the pigment. The affection was very chronic and affected all regions of the body. Elliot's ‡ case was probably one of this kind.

Etiology.—The majority of the cases have been boys (six out of eight of my cases). Nearly all have commenced before six months, and the majority under three months. The earliest age was one of my own cases, in which red patches were noticed when he was first washed, and white wheals came a day or two later; of later origin are Stelwagon's case at eighteen months; a case of mine which began after chicken-pox § between five and six years; of Tenneson, æt. ten years (mast-cells found). Whether Liveing's, Mackenzie's, Pringle's, and some other cases

* *Vide* case of xanthoma multiplex, *Lancet*, May 12, 1888, p. 923. Dr. Barr was kind enough to show me this case, which had some very large permanent yellow plaques. Factitious urticaria was also present, and I had no doubt of the case being an urticaria pigmentosa. See also case reported from Russia in *Brit. Jour. Derm.*, vol. iii. (1891), p. 65, as xanthoma in a child.

† *Brit. Jour. Derm.*, May, 1891, p. 136.

‡ *Amer. Jour. Cut. and Gen.-Urin. Dis.*, vol. ix. (1891), p. 296.

§ A. Woldert also records a case of a male child, æt. three months, after varicella. Abs. *Brit. Jour. Derm.*, vol. xii. (1900), p. 362; and Pick, in Kaposi's *Festschrift*, records a case following vaccination and commencing on the vaccinated arm as U. perstans.

of adults with pigmentation and urticaria are examples of true U. pigmentosa is open to doubt, but in Elliot's case, where the eruption began in a man æt. twenty-eight, mast-cells were present in the lesions in great quantity, while in a case of Quinquaud's, æt. fifty-five, mast-cells were absent, and Lesser had an adult case in which there was no excess of mast-cells. The very early commencement of most cases suggests some congenital predisposition, but beyond this we cannot go. In one of my cases gastro-intestinal catarrh was a prominent cause of the activity of the disease.

Pathology and Anatomy.—Since Unna's* observations in 1887 have been fully confirmed and are now generally accepted, those of his predecessors need not be discussed, though those of Thin, the Hoggans, and Colcott Fox may be specially mentioned. Unna says the epidermis is unaltered, except from the accumulation in the basal prickle layer of ordinary pigment, and some stretching and flattening. Immediately beneath the epidermis there is an enormous accumulation of mast-cells filling up the papillary layer, and the edema is limited to the papillary body. The deep part of the corium is almost unaffected.

The accumulation of mast-cells, which are supposed by some to be derived from the blood-cells, by others from the connective tissue cells of the cutis, are now considered by most observers, except Doutrelepont and Neisser, to be pathognomonic of true U. pigmentosa, and would distinguish it from the pigmentation following ordinary wheals, seen in a few adult cases, in which there are no mast-cells in excess. Slight differences from Unna's observations have been found by others, such as slight hemorrhages in Pick's and Fabry's cases. Brongersma, in Galloway's case, found the mast-cells throughout the whole corium and subcutaneous tissue in rows and columns, the cells being polygonal from pressure, except near the center of the lesions, where they are of the usual spindle shape. Further, Galloway and Brongersma found edema throughout the whole cutis. My own observations agree with these.

Gilchrist examined from a case of U. pigmentosa a piece of normal skin, a four-minutes', an eight-minutes', and a twenty-minutes' wheal. He found in the normal skin more mast-cells throughout than would be found in the skin of a normal person, and there was progressive increase round the vessels and skin appendages in the wheals in proportion to their duration. Hence Brongersma infers that the mast-cells must be derived from the connective tissue, and that the pathogenetic factor is a congenital tendency for the connective tissue cells to develop into mast-cells, and the urticarial wheal, or angio-neurotic element, is a secondary phenomenon, possibly the result of a toxin derived from the degenerated

* Unna's "Histology," p. 955, references to 1891. Gilchrist, Johns Hopkins *Bulletin*, vol. vii. (1896), p. 940; Brongersma, *Brit. Jour. Derm.*, vol. xi. (1899), p. 177, with the most important references to date.

cells, and that the permanent lesions of U. pigmentosa are of the nature of tumors—a view practically that of Unna, who regards them as "stagnation tumors."* Even if it is true that the degeneration products act as toxins in the production of the urticarial element, that would not necessarily make it an entirely different disease. For it is fairly arguable that all urticarias are only angio-neuroses secondary to some toxin, and not only is their urticarial character evidenced by the consideration of

Fig. 11.—Section from border of a yellow plaque of several years' duration, showing masses of mast-cells running for most part in lines, and situated below the papillary layer of the corium. × 1 in. Ross.

the recorded cases as a whole, and not by aberrant cases like Fox's and my own first case, but most of the distinctive appearances of this eruption are seen as occasional features in ordinary urticaria. Thus, great persistence of the wheal is seen in U. perstans; bullæ occur in U. bullosa; pigmentation follows ordinary wheals in many cases. Exudation into the papillæ is seen in U. papulosa, and hemorrhage in U. hæmorrhagica.

* Unna uses this term in a special sense different from the ordinary meaning of "tumor," and applies it to any accumulation of cells, even flat plates, like those of keratosis palmæ, or, as he calls it, keratoma.

And the clinical and histological facts can best be reconciled by the theory of a congenital predisposition to the production of auto-toxins which act on the vaso-motor nerves, the toxins perhaps being derived from the accumulation of mast-cells. But what makes the mast-cells * accumulate?

Diagnosis.—The permanent buff-colored, wheal-like nodules generally associated with ordinary wheals, and always commencing in early infancy, are quite distinctive; but when the per-

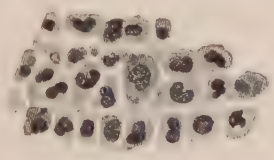


Fig. 12.—A portion of Fig. 11 highly magnified.—Mast-cells in rows. × $\frac{1}{8}$ immersion. Powell and Lealand.

manent lesions are distinctly yellow, without itching or any urticarial symptoms, and the case has gone on for a very long time, it is liable to be mistaken for xanthoma tuberosum. A careful study of the lesions and of their mode of development, with their firmness to the touch and the early age of onset, will distinguish them, and if urticaria factitia can be produced strong confirmation would be afforded. Pigmentation following wheals, and without any permanent lesions, is met with at all ages.

Prognosis.—The disease will probably get well ultimately by the time puberty is reached, if not before, but this is all that can be said of it for most cases, but in one of mine with yellow nodules, which began when three weeks old, the lesions underwent spontaneous involution before he was a year old, leaving cicatrices.

Treatment.—Nothing hitherto tried has appeared to have any effect in removing the eruption, though much can be done to relieve the pruritus by local means, which are of the same kind as for ordinary urticaria. In one of my cases of the Sangster type with chronic intestinal catarrh and offensive motions, relief was always obtained if the bowels were put into order, espe-

* Mast-cells (Ehrlich) are now regarded as coarsely granular basophile leukocytes corresponding with eosinophile leukocytes except in their staining capabilities (Green's "Pathology"). Some authors still regard them as transformed connective tissue cells. They are stained red by Unna's polychrome methyl-blue method.

cially by the use of salol and benzo-naphthol and other intestinal disinfectants, in three- to five-grain doses. After about five years' treatment, much of it spent in educating the mother as to the dietary, avoiding sweets and undigested starch, not only did the wheals cease to appear, but the greater part of the pigmentation faded. In another case, where there was no indication in the health to follow, small doses of Liq. Fowleri ♏ij three times a day had a marked controlling influence in preventing fresh development, but only a few of the minor lesions disappeared.

PRURIGO.

Deriv.—Prurire, to itch.

Synonyms.—Fr., Strophulus prurigineux (Hardy), Scrofulide boutonneuse bénigne (Bazin); *Ger.*, Juckblattern.

Definition.—A disease, characterized by the presence of constantly recurring, discrete, chronic inflammatory, white or pale red, slightly raised papules, most abundant on the extensor surfaces, and accompanied by intolerable itching.

There are two varieties of this disease—P. mitis (Willan) and P. ferox (Hebra),* the difference being one of intensity rather than kind. The latter has only been recognized since 1881 as occurring in this country, and even now extreme forms are rare. Other varieties have been made by some writers, by using the term prurigo in the same sense as pruritus. This leads to confusion, and should be avoided. Hutchinson's "Summer Prurigo" is described under Recurrent Summer Eruptions. Besnier would like to revive Willan's strophulus, lichen, and prurigo under prurigos. but this is to put the clock back, and the modern view is to restrict the term as above stated.

Symptoms.—Individually, the papules are the color of the skin

* Author's Atlas, Plate VII.; medium severity. Hebra's Atlas, Plate VII., Lief. iv.; extreme of thighs and knees. Mr. Morrant Baker read a paper on "Prurigo," at the International Congress of 1881, and showed some cases which the German authorities present acknowledged to be the true prurigo of Hebra. In 1855 White of Boston says that its frequency in Vienna was 1 in 45. It was a subject of discussion in the third International Congress on Dermatology, 1896. *Vide* articles by Besnier, J. C. White, etc.

at first, to be felt, rather than seen; but as they get scratched they become more raised, convex, pale or even deep red, with a dark scabbed top (blood-crust) at the apex. Their size is from a hemp seed to a large pin's head, and they are never grouped. They are most abundant and highly developed upon the extensor surfaces of the extremities, and in the order of intensity occur on the legs below the knee, the front and outer surfaces of the thighs, the forearms, the thorax back and front, the sacral region and buttocks, the lower part of the abdomen, the arms, and dorsum of the feet.

A few papules only appear on the face,* whilst the flexures are almost always free, as are also the neck, palms, soles, and scalp. The hair is, however, dull, dry, and dusty-looking. The itching is most intense and the consequent scratching produces thickening and hardening of the skin, striated and diffuse pigmentation, deepening of the natural furrows, while the lanugo hairs of the surface are broken off or torn out, and fine mealy scales are abundantly detached. When the disease shows no further symptoms than these, and the papules are moderate in number, or, as occasionally happens, limited to the lower extremities, it constitutes the **P. mitis** of Willan; but when it attains to the intensity of **P. ferox**, the papules and scales are more abundant and larger, the legs and forearms feel like very coarse brown paper, which is a characteristic symptom, the subcutaneous fat is atrophied, and secondary lesions are so invariably present, though not without intermission, as to be essential parts of its symptomatology.

These are (1) eczema, which may be so extensive as to cover the parts with crusts and mask the original disease, the flexures, however, being rarely involved; (2) urticarial wheals; (3) ecthymatous sores; and (4) sympathetic enlargement of the femoral glands, often developing into large tuberous masses; while those in the axillæ and above the elbows are also enlarged, but to a less extent. This gland-enlargement remains when the other eruptions are quiescent for a time, and may thus assist in the diagnosis.

There is no special defect of health associated with prurigo,

*"Summer Prurigo," in which, in summer, the prurigo appearance is closely reproduced, is in most cases limited to the face, forearms, and hands.

except what may be due to loss of sleep; but of course they are liable to the same diseases as other people. The face is generally clear and pale.

Etiology.—It affects both sexes, but males twice as often as females, according to Ehlers; it is essentially, though not exclusively, a disease of the poor, want of food and bad hygiene being the most important factors; and, according to Hebra, it is aggravated by cold weather. This, however, is contrary to my experience; some cases certainly come out worse every winter, but all my severe cases were better in winter, while, of the mild cases, some were worse in summer and some in winter. As regards age, it begins usually in the first year of life—in one of my cases it dated from one month old, but Ehlers speaks of a few days after birth. Hebra's dictum that it always began in infancy is given up. I have met with cases at various ages up to twelve, and many observers not only corroborate this, but extend it up to twenty-nine (Ehlers).* No doubt, however, cases beginning over six years old are exceptional.

It probably begins as an urticaria papulosa or lichen urticatus, in favor of which there is a preponderance of testimony, but Besnier still holds that prurigo is not developed from urticaria, and in this Colcott Fox agrees. Comby, on the other hand, quotes cases in which the transition from urticaria to Hebra's prurigo apparently occurred. Few, if any, now accept Hebra's view that the papules are primary, for, as Besnier truly says, "the pruritus survives the papules; the papules never survive the pruritus."

At the beginning of the second year, according to Riehl, small wheals appear together with the larger wheals, and it shows its predilection for the special regions already mentioned; but it is not until the end of the second to the fifth year that the disease is fully developed, the papules increasing in number more and more, while the larger wheals decrease. Thenceforth, unless vigorously and persistently treated at once, it persists through life, though with marked occasional remissions, either in warm weather or cold weather, according to the special idiosyncrasy. These are the only positive factors as to its etiology which are

* Ehlers found that the extremes were from a few days to twenty-nine years. He analyzed 207 cases from Haslund's clinic. *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 861.

established, but there are many to negative the various hypotheses that have been put forward to explain it.

Some pale, intensely itching papules, soon becoming scabbed-topped, sometimes appear in the later stages of Hodgkin's disease, and constitute the "Pseudo-leukemic prurigo" of German authors.

Pathology.—The real pathology of this disease is unknown. Hebra says the clinical facts are against its being a pure neurosis, and that the papules are always primary; but the evidence of the primary eruption being an urticaria is almost conclusive, and gains acceptance in most quarters, and would go far to prove that it was a neurosis to which all the eruptive phenomena were secondary. Ehlers regards antecedent urticaria as merely a coincidence, but on the other side cases like that of Hallopeau * and Barrié may be cited.

Anatomy.—Anatomical examination † of the skin has been made by numerous observers, both ancient and modern, from Hebra and Kaposi downward. Only the more modern, such as those of Riehl, Kromeyer, Leloir and Tavernier, and Unna, need be mentioned. Unna examined eleven papules of prurigo gravis, and his results are those chiefly embodied here. He agrees with Riehl that every prurigo papule has an urticarial basis. There is always a spastic edema of the cutis and great increase in the number and size of the perithelia of the vessels, the latter being greatly thickened. In addition, he confirms Leloir and Tavernier, who found cavities formed by degenerated prickle cells, covered with thickened horny layers, so that the vesicle is invisible to the naked eye, even when, as a consequence of scratching, the cavity gets filled with leukocytes and becomes a pustule with its base on the papillæ, its apex at the split horny layer, through which it is sometimes visible as a yellow point. Unna says that there were no staphylococci in the pus, but there were some other minute cocci, singly and in pairs. Unlike Leloir, he found no connection between the vesicles and the sweat pores. He also, like Auspitz, found the arrectores pili in spastic contraction, so that the hair in the center of most papules, if not torn out, is erected, and in addition he finds proliferative and exudative inflammatory changes and necrosis of the follicle, to which Caspary originally called attention. In brief, there are a series of epithelial changes with both growth and necrobiosis of the surface and follicles above a central severe cellular infiltration of the cutis; these changes originating in a chronic perivascular growth, and an acute spastic edema. In old-standing cases there are also secondary changes which prurigo shares with eczematous

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 520.

† Unna's "Histology," p. 136, gives the most important references.

dermatitis of long standing, when there is the condition described as "lichenification" present.

Diagnosis.—The disease dating from infancy, with the pale red, scabbed-topped, itching papules on the extensor aspect of the limbs, the nutmeg-grater sensation they give to the touch, the excoriations, secondary eruptions, and enlarged glands, constitute a very characteristic group of symptoms. As it is the *combination* of the various lesions which makes up the diagnosis, error in well-marked cases can arise only by making an imperfect examination.

The disease most liable to be mistaken for it is *severe chronic eczema in a xerodermatous subject*, especially as both xeroderma and prurigo date from infancy, and have a harsh, dry skin; but there are neither characteristic papules nor the secondary lesions of prurigo in the eczema, which would probably affect the flexures, and all similarity would vanish upon removing it; moreover, there would be comparatively long intervals of freedom from the eczematous condition.

The knowledge of the possibility of confusion, and the exercise of ordinary care, will prevent error as regards *pruritus cutaneus* from pediculi, acari, or other cause; the same may be said of chronic urticaria, eczema, and ecthyma; they, however, are not liable to be mistaken for prurigo, but, being complications, may mask it when extensive, and be regarded as the primary, instead of the secondary, lesions.

Difficulties arise, however, in the first years of life in severe cases of urticaria papulosa, when it might be open to doubt as to whether it will go on to prurigo, a view which would be favored in proportion to the severity and persistence. Cases which begin after infancy might also be open to doubt. They are usually of mild character, often with partial distribution, and the complications would be absent or slight, such as impetigo contagiosa and urticaria, the severity of the itching being out of proportion to the apparent mildness of the lesions. The persistence of the papules and the rebellious character of the eruption to treatment would be the chief guides.

Prognosis.—This depends upon the age of the patient and the duration of the disease. It is curable in early life, occasionally also in adults; as a rule there are remissions, and the patient's

sufferings may be alleviated by treatment, by which the lesions are so much reduced that delusive hopes of a cure are entertained, but only to be disappointed. Much depends upon the persistence of the treatment which can be afforded to the patient, so that relapses can be promptly dealt with. The cases of the greatest severity (fifteen per cent., Ehlers) are perhaps incurable from the first.

Treatment.—The indications are to relieve the itching, to remove the eruptions, both primary and secondary, and to improve the general health. To fulfill the first two indications, external remedies must be chiefly relied upon, and applications which produce softening and removal of the uppermost layers of the cuticle are, according to Hebra, the most effectual; but internal remedies may afford some relief to the itching. Improved hygiene, especially a liberal dietary, cod-liver oil, and iron, are the most effectual means to restore and maintain the general health; but it is astonishing how much temporary benefit, both to the lesions and the comfort of the patient, is sometimes produced by merely keeping the patient in bed, and giving a liberal diet.

I have found, also, that the tincture of cannabis indica, given internally, exercises a marked influence over the itching, mitigating it considerably; it must, however, be given in full doses; *e. g.*, for a child of eight or ten I begin with five minims, and increase it up to even thirty minims, three times a day, directly after meals, allowing an interval of a fortnight in its administration about every six weeks. When taken in these large doses for a long period it may produce dullness of intellect and loss of memory, effects, however, which soon pass off when the drug is suspended. Blaschko says that antipyrin, beginning with two-grain doses, also gives great relief. Dobrowski has found that thyroid extract suppresses the eruption as long as it is taken, but does not cure. Any eczema or ecthyma that may be present having been first removed by the usual means, I have found the following course of treatment effectual for the alleviation of the remaining skin troubles: the daily use for half an hour of alkaline baths ʒ ij to ℥ iv sodæ bicarb. to thirty gallons water at 90° F., inunction of oil of cade ʒ j to ʒ j of lard or vaselin or of naphthol ointment as below, twice a day; tincture of cannabis indica internally as first described, cod-liver oil and iron when

indicated, and plenty of good food. I have also employed sulphid of potassium baths with benefit.

Massage, preferably with a lubricant like vaselin, has been found by Murray of Stockholm to give great relief to and even to abolish pruritus for a time, and thus to procure the subsidence of secondary eruptions. Hatschek of Vienna and others confirm this.

There are several modes of treatment recommended by the Vienna school, where they see a far larger number of cases than we meet with in England.

The soap treatment of Hebra is very effectual, especially where there is great infiltration of the skin. A piece of flannel moistened with warm water is dipped into the spiritus saponatus alkalinus (Lotions, F. 5), or into the fluid glycerin soap, and the parts rubbed briskly for some minutes; the latter is then washed off, and the body rubbed over with vaselin or other emollient. This process is to be repeated daily for a week. The skin should then be rubbed over with an emollient, and after an interval the treatment repeated. It is unsuitable for very young children, or where there are any sores or much eczema.

The Sulphur Treatment.—This may be applied in various ways and combinations—sulphid of potassium baths or sulphur fumigations, sulphur and sulphur-sand soaps, or Hebra's sulphur ointment used as follows: Rub it well in all over, after the patient has had a bath; let him lie thus smeared, naked between blankets, and repeat the inunction night and morning for a week. The patient is then to get up, and in three days the epidermis begins to be shed, and he should then have another bath. After the course, slight cases appear quite well, severe ones much better. This plan is suitable for older patients who can give themselves up entirely to treatment.

Vlemingkx's solution of lime and sulphur (Parasiticides, F. 11), though not quite so effectual as the ointment process, can be employed without the patient giving up his occupation. It is suitable for cases with dry papules only; the patient, after a thorough washing with soap and water, should be well rubbed with the solution, then take a warm bath for an hour, and afterwards a cold shower-bath. My own form of nascent sulphur and sulphurous acid treatment (F. 37) is a milder but efficient variant.

The Tar Treatment.—The tar bath gives good results; common

tar or carbolic acid is painted on with a brush, and the patient immediately steps into a warm bath, and stays there for from three to six hours;* the process may be repeated until it produces an intense burning sensation, or tar acne is produced. Carbolic or tar soaps or lotions, such as liquor carbonis detergens diluted, are also useful, or any of the above preparations of tar made into an ointment, and, indeed, the inunction of any form of grease gives some relief.

Naphthol β Treatment.—This is strongly recommended by Kaposi, as equally efficient and more pleasant than the other methods, and it is also curative for the eczema complications. A five per cent. ointment for adults, or a two per cent. for a child, is lightly rubbed in every night, and every second night the patient may be washed with naphthol sulphur soap. This treatment is continued until the prurigo manifestations disappear, and renewed whenever the disease returns. I can indorse Kaposi's recommendation.

According to Tenneson, complete occlusion from the air for several days gives immediate relief from the incessant itching, which may last for days, weeks, or even months, in mild cases. India-rubber clothing is the most practical way of carrying out the plan, but confinement to bed is simpler and almost as good.

Perchlorid of mercury baths are recommended by Woolmer.

Which of the above methods should be chosen depends upon the severity of the disease and its complications, the age and occupation of the patient, and the time he can give up to treatment; *e. g.*, for infants and young children, alkaline baths and one of the tarry ointments, with the administration of cod-liver oil, will probably be efficient. Bed, cannabis indica, and naphthol ointment are my chief means of treatment. Indications for the use of the various methods have been given under each, but it must be borne in mind that whichever plan is selected must be carried out vigorously and perseveringly for the cure of the young children and the relief of the older patients.

* In all cases the patient should be carefully watched, as faintness may ensue from such prolonged immersion.

ECZEMA.

Deriv.—Ἐκζέω, to boil over.

Synonyms.—*Fr.*, Eczéma; *Ger.*, Eczem, nässende Flechte.

Definition.—An acute or chronic catarrhal inflammation, attended with severe itching, burning, and great multiformity of lesions, viz., erythema, papules, vesicles, pustules, scales, scabs, etc., while a continuous discharge of serum or pus is generally present in some part of its course except in the mildest forms.

Dermatologists differ so much as to what conditions should or should not be included under eczema, that it is necessary to state *in limine* what the term connotes in this section. First as to what is excluded. All forms of seborrheic dermatitis which are treated in a special section under Seborrheides. 2. Those forms of dermatitis due to strong irritants which excite in all persons exposed to them a violent inflammation, clinically and anatomically distinguishable from eczema. This subsides spontaneously when the irritant is removed, or at all events the inflammation is readily subdued by treatment. These are discussed under Dermatitis. On the other hand, there are many substances which are not irritants at all to the majority of those exposed to them, but in certain predisposed persons produce a dermatitis indistinguishable from eczema, not only in the part to which it is applied, but which will spread beyond this, and even lead to a similar inflammation, often symmetrically distributed in distant parts. These forms of dermatitis are included here on grounds which will be discussed under Etiology.

Eczema is the most common of all eruptions, and constitutes at least a fourth of the cases of all kinds of cutaneous disease (Bulkley finds it one-third). It is most protean in its manifestations, often extremely persistent, while it is frequently associated with, and dependent upon, many other morbid conditions, both external and internal. It is impossible to give a single definite and at the same time complete picture of even acute eczema in all its phases, but all the variations are primarily referable to four kinds of elementary lesions, so that the eruption may be *vesicular*, *pustular*, *papular*, and *erythematous*, with more or less scaliness, primary squamous eczema being a sub-

variety of the erythematous form. These may be combined in various ways and degrees of development; and may further be modified by an increase or decrease in the intensity of the inflammation; by the difference in the position and anatomy of the part attacked; or by the inflammation attacking only a part instead of the whole structure of the skin, *e. g.*, the hair follicle or sweat gland; and lastly, by secondary changes resulting from long-continued inflammation.

Whilst these elementary lesions are readily recognizable in all acute stages, they are not always so in cases, subacute either at the commencement or in the decline of the attack, nor in some of the chronic forms, from secondary changes in the skin. These modifications will be pointed out in their appropriate places.

The four primary forms have the following points in common: they are all acute in development, though of indefinite duration; each may come upon any part of the body, but at the same time has its favorite seat, on which it most frequently occurs and is most highly developed. Whilst, on the one hand, only one form may be present, and running its own course, seem quite a distinct disease from the others; on the other hand, vesicles, pustules, papules, and erythema may be present all together, more or less mixed up, or on separate parts of the body, so that there can be no doubt that they are merely different expressions of the same morbid process.

Then again, instead of preserving their special characteristics, the erythematous and papular forms may develop into the vesicular, and this again into the pustular variety, or the process may stop short at any point. Thus, then, the division between these forms is not an absolute one, but is useful for description, and to gain a clear conception of a complex process.

Eczema in all forms, when not due to a local cause, is roughly symmetrical, though one side is often worse than the other.

E. Vesiculosum. This is a common,* and in one sense the most representative, form of the disease. It is seen best and most commonly where the skin is thin, *i. e.*, on the flexor aspect

*Unna, "On the Nature and Treatment of Eczema," *Brit. Jour. Derm.*, vol. ii. (1890), p. 231, says it is the least frequent; but, excluding his seborrheic form, this is not my experience.

of the limbs, especially the flexures, between the fingers, behind the ears, etc. It begins with burning and itching, soon followed by the appearance of diffuse or punctate erythema, on which minute, closely aggregated, clear vesicles develop, enlarge, perhaps coalesce, and soon rupture, either spontaneously, or from scratching, exuding a clear, plasmic fluid, which stains and stiffens linen; the part all this time being intensely red, hot, and itchy, and attended with more or less infiltration and swelling. The itching is relieved somewhat when the vesicles rupture, but the burning remains, these symptoms being always worse at night, and when fresh vesicles are forming.

Unlike other vesicular diseases, the rupture does not terminate the active part of the process, but there is a continuous discharge, either from fresh vesicles, or more frequently from the site of the ruptured vesicles, and whenever it is irritated by scratching into an excoriated surface. It is this weeping stage that is most frequently seen, the vesicles having generally ruptured before the patient applies for relief; or, as very frequently happens, the violent itching or burning induces corresponding rubbing or scratching, which denudes the surface sufficiently to allow of the escape of the fluid without actual vesicles being developed, or, if the outpouring of fluid from the vessels is gradual, the epidermis may crack and ooze without the formation of vesicles. Where the part is not disturbed the discharge may dry up into yellowish gummy crusts, and on removal a moist surface is exposed, on which a new crust soon reforms.

In a favorable case, after a few days the fluid ceases to exude, the redness diminishes, the denuded part skins over, and only some transitory redness is left; or the subsidence may be less complete, and, though the discharge ceases, there is still redness and thickening, and the part is covered with scales instead of crusts. This is **E. squamosum,** a condition which will be more particularly described presently; or, instead of the exudation diminishing, it may, with the hyperemia and other symptoms, be increased, and the condition passes on into **E. rubrum.**

As a rule, however, none of these events takes place, and the discharge may continue, though there may be some improvement, but fresh vesicles are frequently forming, either at the border of the patch or elsewhere, and so the disease may cover a larger and larger area, until nearly the whole body surface is

involved. It is very rare, however, for eczema to be absolutely * universal, and I have met with few instances of it; but it is very common for it to be very extensive and fairly earn the title of general eczema; on the other hand, it is often quite striking how the eruption limits itself to one locality, and, even when cured for a time, returns in a future attack at the same place.

It is astonishing how little the general health is affected, except in the aged, even in the most extensive cases. Pain, tension, and itching succeed each other with each fresh outbreak; the patient loses rest, is very sensitive to cold, and may experience a transitory sense of chilliness with each crop of vesicles, but he seldom has febrile or other symptoms affecting the pulse, temperature, urine, or feces.

E. Pustulosum.† *Synonym.*—Eczema impetiginodes.

Here, instead of vesicles, there are pustules due to pus cocci, and they may arise directly, or the vesicles may become pustules, which will be larger than the vesicles. It is most frequent in children and in those who are cachectic from any cause, especially the strumous, and is most common and typical on the scalp. It is often seen as a folliculitis elsewhere, and thus may be found on the beard and whiskers, pubes and axillæ, or scattered over the thighs; but there is less tendency to form patches than in the vesicular form, and the folliculitis is secondary, being left behind after the general inflammation of the whole skin structure has subsided. Below the elbow or knee, however, it is frequently seen covering almost the whole limb. It is attended, usually, with less irritation and less redness and swelling than the vesicular form, and when the pustules burst and dry up

* Universal pityriasis rubra may, and often does, develop from eczema, but the eczematous characters are then merged into those of pityriasis rubra.

† E. impetigo was the term used by many older writers—impetigo being a generic term for pustular inflammation. Besides this, other qualifying terms were used by Willan and his immediate followers, such as impetigo sparsa for small scattered patches, I. scabida when there was unusually thick crusting, I. erysipelodes when the inflammation was deeper than usual. Melitagra was used for the honey-like crusts sometimes seen in I. figurata, and crusta lactea and porrigo larvalis were used for crusts on the face, in infantile eczema. Doubtless I. contagiosa was mixed up with these very often. All these terms had better be forgotten.

they form dark brownish-greenish crusts,* which may cover a large suppurating surface. As the inflammation subsides the secretion is stopped, the crusts dry completely, and can be easily picked off, except in a hairy part.

E. Papulosum. *Synonym.*—Lichen simplex.†

This is a common and often very obstinate form. Originally it was thought to be a kind of lichen, on account of the papules, which are due to the inflammation, affecting only the hair follicles or small groups of papillæ. The papules may be either discrete, scattered irregularly, or grouped and perhaps confluent; and their favorite seat is the extensor aspect of the limbs and the back. They are about the size of a pin's head, acuminate, of a bright, less frequently of a dull red color, and may remain as papules throughout their whole course **(lichen simplex).** Often, however, with a lens a tiny cap of fluid may be observed, and when the vesicles on the top of the papules were evident and numerous the lichen was said to be inflamed, and it was called **lichen agrius.** When the papules were grouped in oval or roundish patches, a form not uncommon on the extensor aspect of the forearms and hands and on the calves, it was **lichen circumscriptus.**‡ In this variety the vesicles and papules often coalesce into a weeping patch, and then it looks like ordinary vesicular eczema in the discharging stage, except that it is in roundish or oval patches, more defined than those of eczema usually are, and situated on the extensor aspect of the limbs. All these names are now disused in the above described senses, though there are still some who regard lichen simplex as a separate disease, even though the vesicles and papules are so frequently associated. All the papular forms of eczema are troublesome, on account of their obstinacy to treatment, either from the same papules or vesiculo-papules remaining for a long time, or from their dying away and reviving again and again in the most capricious and persistent manner. While burning and

* Author's Atlas, Plate VIII., Fig. 2.

† Lichen simplex chronique of Vidal is a different condition, described under "Lichen."

‡ "Lichén circonscrit" of French authors now is applied to the lichen simplex of Vidal. Lichen circumscriptus has also been applied to the totally different affection now called seborrhea papulosa corporis.

tingling are the usual features in the vesicular, itching of the most intense character is experienced in the papular form, and blood-crusted papules are the natural consequence. When the papules are closely aggregated, they may coalesce into a scaly patch, constituting a form of E. squamosum often seen upon the limbs.

E. Erythematosum is seen in its most typical form on the face; there it is attended with much heat and swelling, the edema sometimes completely closing the eyes. It begins in ill-defined erythematous patches at any part, and may rapidly cover the whole surface or remain patchy; the color is bright, or dull red, the surface is not glistening, but rough from a slight scaliness, and there is no discharge; after a time the scales cease to form, the redness diminishes, and it gets gradually well. In other cases the inflammation is constantly varying in intensity, now apparently getting rapidly well, and a short time after breaking out again as bad as ever, and this may go on for weeks, months, or even years. In other cases, again, it begins to ooze, by splitting of the epidermis, or with formation of vesicles, and discharges like the vesicular variety. When occurring on adjacent surfaces, as on and under the breasts or about the genitals, a muciform discharge ensues, and it is called E. intertrigo. On the other hand, the thickening and scaliness may gradually increase, and it lapses into E. squamosum. In some cases, not very infrequent, it takes the form of round or oval patches (**E. orbiculare**), well defined at the borders, two or three inches in diameter, bilaterally, but not symmetrically, scattered over a considerable area. Some authors regard this form as of seborrheic origin.

E. rubrum or **Madidans** may be developed from any of the above four varieties, though it is most frequently a sequence of the vesicular or pustular form. In it the inflammation is of a most intense character, and while, like the others, it may come anywhere, it is most frequently observed in elderly people on the legs, the whole of which may be involved. The surface is an intense bright or dusky red, entirely denuded of the upper layers of epithelium, weeps profusely, and discharges a clear or turbid, straw-yellow glairy fluid, which may dry into large yellowish or

brown crusts. These cover a great part of the limb, like a piece of armor, and when the edges are raised can be easily detached from the copiously discharging surface beneath, from which blood also exudes with the slightest friction. The infiltration is considerable, and as cases often last for a long time, the induration is great, especially on the lower limbs, and in the flexures, where it often occurs, deep and painful fissures are frequent.

There is a circumscribed variety which occurs, in my experience, only in persons of a markedly scrofulous type. In this, **Eczema rubrum scrofulosorum,*** the patches are sharply defined, of round or gyrate outline, often by coalescence of considerable size, and situated on the lower part of the leg and foot. The surface is deep red, constantly discharges a sero-purulent secretion, and spreads slowly at the margin, and unless properly treated runs a very indolent course. The lesion is evidently due to microbic invasion, and the local treatment based on that view is the most successful. The usual constitutional treatment for scrofula is a valuable adjunct.

E. Squamosum. While E. rubrum is the result of increased, E. squamosum is an indication of decreased intensity of the inflammation, and a large proportion of cases begin and remain throughout their whole course as dry scaly patches.

It also may arise from any of the four primary forms, but it is most frequently a sequel of E. erythematosum—indeed, Hebra used the term in that sense. It is, however, better to restrict it to the subacute inflammations, whether primary or secondary to one of the more acute forms, as it is produced whenever the inflammation is of too low a grade to cause much exudation from the vessels, exciting instead hyperplasia of the rete cells. It occurs mainly as ill-defined irregular patches of variable size, in which there is redness, and when the patch is pinched up very marked thickening is felt; the red ground is more or less concealed by coarse or fine scales, which may be abundant or scanty, but easily detachable, and never adhere into crusts like those of psoriasis. As a rule, the patches are not so well defined as the eczema-form cases of seborrheic dermatitis, to which in other respects they may show marked resemblance.

* Author's Atlas, Plate IX., Fig. 2.

This form is often well exemplified on the neck and limbs. In the mildest form it is not uncommon on the face, chiefly in children, as ill-defined, slightly scaly patches, with little redness and no perceptible infiltration; this used to be called **pityriasis simplex**, and is often due to the irritation of soap; it is often associated with seborrhea. In the more severe forms it may be obstinate, the secondary thickening being difficult to remove.

Acute and Chronic Eczema. These terms are used in different senses. They may refer to the intensity of the inflammation or to its duration. Eczema may run a short course with a high grade of inflammation, and then no one would dispute its right to be called "acute," but more frequently the course is a long one, consisting of a succession of acute attacks, or rather exacerbations, with but trifling secondary changes. For all practical purposes such cases are still acute, and require the treatment for an acute inflammation, but lasting for months are often called "chronic." In other cases again secondary changes occur as the result of long-continued inflammation, and become the most important element for the treatment; and though liable to acute exacerbations, the inflammation, as a whole, is less intense. Such cases are clearly entitled to be called "chronic."

These secondary changes are, first, induration and thickening of the tissues: when the induration is the main symptom it has been called "**E. sclerosum**"; then the hardness is almost board-like, and the surface scaly. It is seen most frequently and in its highest development on the legs.

In some instances, where the thickening is also very great, a condition indistinguishable from elephantiasis arabum is produced (**E. spargosiforme**). The tissues may be enormously hypertrophied, producing deep folds at the bends of the limbs, and sometimes indolent ulcers, and the limb is so cumbersome and useless that the patient is glad to be relieved of it by amputation. Of course these are only the worst cases, and there are all gradations up to this, which may be mitigated by treatment even when they cannot be cured. In some cases hypertrophy of the papillæ takes place, and a diffuse warty condition ensues; it may be covered with an epidermic crust, or an evil-smelling discharge may exude from between the papillæ; this is

"**E. verrucosum**" and "**E. papillomatosum.**" These conditions may be combined in various proportions.

Ulceration and edema are also occasional events, chiefly in connection with varicose veins. The extreme conditions are very exceptional, but they are not always indicative of a very long duration. They are almost confined to the legs below the knee, as are also the modifications induced by varicose veins, such as orange, brown, or blackish discolorations from subcutaneous hemorrhages, and a livid hue of the patches, which sometimes simulate those of lichen planus.

It is common to see qualifying terms for eczema, simply indicative of their locality, such as "**eczema capitis,**" "**eczema genitalium,**" "**eczema palmare,**" etc. They are for the most part simply convenient to express briefly the limitation of the eruption, but at the same time the clinical features are often modified by the locality. Some of these modifications will be specially referred to. In **eczema capitis et faciei** the inflammation is much more liable to take on a pustular form, and the inflammatory products are mixed with the sebaceous secretion, become entangled in the hair, and form thick crusts of a dirty greenish-black hue, often with a foul odor. "Eczema faciei," probably from its external position, is often very obstinate, being the last part to get well; and showing a great tendency to recur, even without apparent provocation. "**Eczema genitalium,**" eczema of the scrotum or vulva, begins as an E. erythematosum, and is often limited, in the case of the scrotum, to the lateral surface, on account of the natural heat and moisture aggravating the inflammation. The pruritus is so intolerable that the patients lacerate themselves severely in seeking momentary relief by scratching, and much secondary thickening of the parts may thus be induced; also, owing to the moisture, scales and crusts do not adhere to any extent.

E. Palmare. Eczema of the palms and soles is so modified by the thickened epidermis of those parts that it is often called **psoriasis palmæ.** Vesicles are seldom formed, but there is congestion and great irregular thickening of the epidermis, and the constant motion and loss of flexibility leads to its splitting and forming fissures, chiefly in the lines of motion, which penetrate to the corium, and every movement is most painful, so that

the patient is quite disabled from manual employment. This is the **E. rimosum** of McCall Anderson. The inflammation may be limited to the center of the palm; but usually it starts at the root of the thumb or wrist, and gets into the palm subsequently. Longitudinal fissures often occur at the tips of the fingers and thumbs. The **nails** may also be involved; they become discolored, of a dirtyish-yellow hue, are pitted, furrowed, thickened or thinned, split both vertically and into lamellæ, and produce great disfigurement. When (chiefly in hyperidrosis palmæ) vesicles do occur on the sides of the fingers or palms, where the skin is thick, they often do not rupture spontaneously, but remain as small, transparent, dark spots, not raised above the level of the skin, and compared to boiled sago grains, or where the inflammation is very intense the original vesicles may coalesce into irregular bullæ. Between the fingers and on the back of the hands, where the skin is thin, they rupture readily enough. The well-known "chaps" are of similar pathology, except that there is not an eczema present, and that they are the consequence of local irritants, especially insufficient drying after being in water; but badly made soap, very hard water, handling acids, etc., are other common causes.

Children.—It is in what may be called **"infantile eczema,"** that is, as it is seen under five years of age, that the most marked differences are noticeable. The chief of these is its much greater tendency to be pustular, a tendency which it shares with most kinds of inflammation in childhood. Another point is its being more easily excited by local irritation, and also reflexly, through irritation of the alimentary canal. The head and face, especially behind the ears and on the cheeks, are most frequently attacked, and when other parts are involved it is generally by spreading downwards from the head, though there are often intervening intervals of healthy skin.

In strumous children, and occasionally in others, subcutaneous abscesses are frequent, especially in the occipital region, and they may be very extensive. They often form rapidly and insidiously, with very little constitutional disturbance. Enlarged occipital and cervical glands are also common. In analyzing over 300 cases of eczema, under thirteen years of age, from the Children's Hospital at Shadwell, I found that under five years old there were 81 *per cent. on the head and face*, against

19 per cent. in all other positions; while from five to twelve the proportion was only 63 per cent. Where the eczema was in more than one region, both were counted. Adding 340 cases from Shadwell to 353 from University College Hospital, making 693 cases in all, there were 423 males to 268 females; 575 cases were under five years, while 176 were from five to thirteen; and of these 575, 327 were under two years; and of these again, 322 were under one year. The totals made about an equal number up to six months and below twelve months, and six years; but at University the number between six and twelve months predominated, while at Shadwell there were more up to six months. With this exception the number at both places agrees most curiously, and shows that one-third of all cases in children begin in the first year of life; and since many of the older cases had persisted since infancy, this is an under- rather than an over-estimate. In the second and third year the numbers are nearly equal—94 and 88; but after that the disease steadily declines in frequency to the sixth year, and from that age remains nearly the same up to thirteen.

According to Unna, the "eczema capitis et faciei" of children occurs in three forms—the seborrheic, the nervous, and the tuberculous. The tuberculous is the form seen chiefly on the face, or in association with conjunctivitis and rhinitis or otorrhea in the strumous children of the poor, and in my opinion is nothing more than a dermatitis excited by contagious pus—a form, indeed, of impetigo contagiosa. If the supply of contagious pus be stopped by suitable treatment of the conjunctivitis and rhinitis, the dermatitis is readily cured by the application of diluted ammonio-chlorid of mercury ointment, or similar antiseptic application.

Unna found that some of these cases improved under tuberculin injections, and thought it confirmed his opinion as to the tuberculous nature of the affection; but tuberculin may modify various kinds of unstable tissue, and I have seen warts disappear after one or two injections given for lupus.

The nervous form is, he says, due to reflex irritation chiefly from dentition, and is characterized by great itching and tendency to recur. It commences on previously healthy skins on the cheeks and forehead, and radial surface of the back of the hands and wrists, often spreading up the forearms to the lower

third of the arms. With this I agree, except that dentition plays a much less important *rôle* than he states, irritation of the alimentary canal from unsuitable food being the most frequent factor in the majority of cases, for the disease often starts long before teeth need be thought of. According to my observation, beyond a slight exacerbation of a pre-existing eczema just before the eruption of a tooth, the process of dentition is as harmless as *a priori* one would expect a natural process to be.

In the seborrheic form the skin was not previously healthy, a progressive seborrhea of the scalp having been present, perhaps from a few weeks after birth. After acquiring a moist character, it attacks the ears, forehead, cheeks, eyebrows, but not the rest of the orbits, and extends to the shoulders and upper part of the arms in usually dry, fatty foci; the fatty character is always preserved even when the surface is moist. The eruption is much less irritable than the nervous form, but more than the tuberculous, and has a constant tendency to generalize on the genitals, back, and lower limbs.

While this account is clinically a true description of some cases, I do not think there is such a sharp line of demarcation to be drawn between the nervous and the seborrheic forms, either as regards pathology, course, or treatment, as Unna does; indeed, he admits that it is not always possible to make the distinction, especially if not seen at the early stage, and his statements as regard treatment are only of limited application, viz., that ichthyol in the gelatin zinc paste must be prescribed for the nervous form, while it is useless in the seborrheic form, in which sulphur or resorcin ointments are the applications indicated.

The Elderly.—Chronic squamous patches, with great thickening, are frequent about the lower part of the legs. This arises partly from varicose veins, partly from the frequency of development of the gouty diathesis, the ankles being a favorite position for gouty eczema.

In very old people also eczema is one of the signs of decay or of defective elimination, and when acute, may leave freckle-like pigmentation behind it. Often it is very extensive, but mild in degree, being only slightly rough and red, with tendency to superficial splitting of the epidermis, and general paroxysmal itching out of proportion to the degree of inflammation. A con-

dition intermediate between psoriasis and eczema occurs sometimes on the hands of elderly women. The edges of the eruption are well defined, and the patches are dry, scaly, and intensely red and itching; but when there has been any eruption elsewhere, it has been more distinctly eczematous, and is therefore placed here.

Eczematous inflammation is much modified in appearance when it is limited to any one of the appendages of the skin.

Seborrheic eczema is described under the seborrheides.

Sweat eczema may be seen in various forms. An inflammation of the sweat glands is seen in milaria rubra and lichen tropicus, and is not usually classed with eczema.

Many persons who suffer from habitual hyperidrosis are liable every summer to a vesicular eruption, which starts along the sides of the fingers as minute vesicles with slight inflammation round, and may be limited to those positions, or may, if more severe, extend with increased inflammation to the palms and other parts of the hand.

A general eruption,* chiefly on the trunk and inner aspect of the limbs, sometimes follows a chill, whilst in an overheated or actually sweating condition. The eruption, then, consists of irregular groups of acuminate or rounded pin's-head papules, which, in parts, coalesce into irregular slightly scaly patches, so that, as a whole, the surface is more or less thickly covered with irregular scaly patches, with single and irregularly grouped papules interspersed. There is moderate itching, and if the patient is not subjected to alternations of temperature it is fairly amenable to treatment.

Hair follicular eczema is represented by the various papular forms of eczema already described as occurring on the extensor aspect of the limbs. Under the title of **Eczema folliculorum** Morris describes what he considers a special form characterized as follows:

"Each inflamed follicle stands out on the skin as an angry-looking red pimple (? papule); the capillaries round are con-

*This form of eruption is depicted in Plate XI. of my Atlas. In the text it is suggested that it may be seborrheic, but I have since had strong clinical grounds for considering it to be a sweat eruption.

gested, and soon the skin is involved in the process. In this way red patches dotted with inflamed follicles are formed, which tend to spread by the extension of the inflammation from follicle to follicle. As a patch spreads at the edge it usually undergoes resolution in the center, desquamation takes place, and the redness fades into a yellowish stain. The itching is often most intense. The patches are generally multiple, and are scattered about the body, especially on the extensor surfaces of the arms and legs. The predilection for the extensor surfaces of the limbs is a distinctive feature, and the affection is obstinate, and recurrence is almost the rule. It is closely allied to sycosis, and there can be little doubt that it is of parasitic origin."

Nervous Eczema. Although disturbances of the nervous system often lead to an outbreak of eczema (*vide* Etiology and Pathology), I do not believe that there is anything special in its external characters which would enable it to be recognized apart from the history and other evidence of the nervous origin, and there is not, therefore, sufficient warrant for the creation of a special variety.

Etiology.—Men * and women are alike subject to eczema from the first to the last week of existence. At the same time it is more common in the infantile period, and in the decades from twenty to thirty, and thirty to forty. Heredity, although often put forward, has but slight claims to be considered as a cause, beyond the fact that some skins are more vulnerable than others to external and internal noxious influences, and the parents will probably transmit a similar skin to their offspring.

The causes of eczema are external and internal. Some authors exclude all cases in which a local irritant has been the exciting cause. Thus Morris says, "Lesions due to such causes may be exactly like those of genuine eczema, but there is this fundamental difference: they appear in response to a visible cause, and begin to disappear when that cause ceases to operate." † As a general statement this is only true for the

* Hebra gives the frequency of males to females as one to two, but this is probably due to special peculiarities in his clinic. For interesting statistics on eczema see Bulkley's monograph, chapter ii. In children, as I have shown, males predominate as five to three.

† Discussion on Eczema at Brit. Med. Assoc. in 1898, *Brit. Jour. Derm.* vol. x. (1898), p. 350.

strong irritants which will excite violent dermatitis in any skin exposed sufficiently long to their influence. Rhus toxicodendron, tartar emetic, croton oil, turpentine, etc., may be cited as examples. As a rule this dermatitis is readily recognizable as due to an irritant having characters very different from ordinary eczema. (*Vide* article Dermatitis.)

The weaker irritants require a predisposition on the part of the individual, either permanent, from the skin being especially sensitive, or temporary, from some want of general vigor from various causes, the same irritant being ineffective when the individual's vital powers are at their best.

In a very large proportion of such cases the eruption does not "begin to disappear when the cause ceases to operate," if that means when the irritant has been removed. On the contrary, the inflammation not only spreads beyond the part to which the irritant was applied, but an eruption, often symmetrical, may start up in quite different parts of the body, and present the same appearance and run the same erratic course of the "true eczema which arises without obvious cause." I believe, therefore, that it is more logical and practical not to draw such arbitrary distinctions, and to consider all cases as eczema which correspond in their morphology and general behavior irrespective of the cause being tangible or intangible, external or internal.

The possible *external* causes are almost as numerous as the number of agents that will irritate the skin; it will thus be only necessary to give examples of different classes of irritants, as a complete list of them would be almost interminable. To some of these eczemas names have been most unnecessarily given, the irritant differing, but the eczema being much the same, except where the intensity of the irritation varies; E. solare, E. mercuriale, and E. sulphure are examples of these superfluous designations.

All irritants may be divided into chemical, thermal, and mechanical. The *chemical* irritants include a large number that are used medicinally, such as the whole class of counter-irritants, sulphur and mercurial inunction, dilute acids, dyes, soaps that contain an excess of alkali, etc. The *thermal* irritants are the direct rays of the sun (E. solare) and artificial heat, which often produces eczema in those exposed to it, such as stokers, blacksmiths, and cooks.

Cold has a strong influence, and eczema is more common and severe in winter than in summer. It is especially injurious when combined with wet, and when the parts exposed are allowed to dry spontaneously, as exemplified in washerwomen and barmaids. The nature of the fluid, the strong soda of the one and the beer of the other, often plays an important part, but the excessive use of water in the form of baths, as in hydropathy, mineral spring cures, etc., may also produce a sweat dermatitis or a veritable eczema.

Of cold, *per se*, the winter eczema of the ichthyotic may be specially mentioned, though it is by no means limited to them.

Mechanical irritants, such as handling dry powders, scratching in pruritic eruptions—parasitic or otherwise—the friction of articles of clothing, pressure, etc.

Many of these might be classed as "trade eczemas," and are at first limited for the most part to the parts exposed to the irritant, though it may spread from that as a starting-point, and moreover the inflammation does not always subside at once after the removal of the irritation. Their nature was formerly misunderstood, and so we meet with such expressions as "baker's, grocer's, and bricklayer's itch." The bichromate of potash used by French polishers so much nowadays sometimes produces a recognizably "irritant dermatitis"; in others, one indistinguishable from eczema. In most of these "trade eczemas" a predisposition is generally required, as many members in the same trade escape evil consequences altogether.

Morbid secretions, such as diabetic urine, decomposing sweat, and various discharges from mucous membranes, vagina, nose, etc., may produce eczema either by acting as irritants or by the presence of pathogenic micro-organisms in them. Nasal discharges almost always contain pus cocci, which will probably set up their special lesions.

Predisposing Causes.—These are very important, sometimes indicating the most effectual line of treatment. They may be in the skin itself, congenital or acquired, or in the general organism, the so-called constitutional conditions. The skin itself may be anatomically defective, as in ichthyosis and its milder form of xerodermia, the last being especially important, as it is easily overlooked. The dry degenerative changes of the skin in old age also favor the development of eczema, which extends

widely, and is often very rebellious to treatment when it once gets a footing.

T. Fox thought that the eczematous skin in all persons was irritable and dry; that dryness favors the occurrence of eczema is well exemplified in the case of ichthyotic patients, but I would hesitate to say that the skin excretions are deficient in the majority of eczematous patients; indeed, eczema is common in association with hyperidrosis, and probably both in this and seborrhea, the excessive secretion, like the scratching in severely pruritic diseases, favors parasitic invasion.

There is one local condition that greatly favors the occurrence of eczema in the neighborhood, *e. g.*, varicose veins, whether of the leg or rectum. Any part being chronically congested is halfway towards inflammation; just as in emphysema the train is always laid for bronchitis, so it is with varicose veins and eczema—a slight local irritation or vital depression, and the inflammation is lighted up.

Besides the visible defects of the skin there are invisible defects which make some persons' skin more vulnerable to eczema than others, but there is little satisfaction to be gained from the theory of the older French authors * who laid great stress upon what they called the dartrous diathesis, to which they refer eczema and several other cutaneous diseases, but these views now meet with but little acceptance in or out of France, and need not be discussed at any length.

With regard to the *internal* causes, there has been an immense amount of hypothesis, often reposing on a very slender foundation.

The eczema patient is seldom in a state of well-being at the time of the supervention of eczema. Instead of the clear, ruddy complexion, so often seen in psoriasis, a heavy expression, and pasty, or even earthy complexion, is the rule; the patient generally complains of something, sometimes only of "being out of sorts," has lost energy, or is no longer up to his work. One of the most common factors is an exhausted nervous system (the neurasthenia of American writers), whether from worry, anxiety, overwork, either of mind or body, or from disease; in-

*See Bazin in "Affect. Cutan. Arthrit. et Dartreuses," 2d ed., p. 47 *et seq.* (Paris, 1868), and Hutchinson's "Lectures on Rare Diseases of the Skin."

deed, eczema is almost like a parasite in the way it seizes upon and flourishes on the weak or vitally depressed, independently of the cause of the depression.

Foremost among all internal disorders I would place derangement of the alimentary canal; the complex condition known as dyspepsia is very frequently present, and the bowels are very often disordered, either from constipation or from diarrhea or deficient bile. This may, however, be simply a concomitant, an acute eczema being often associated with pale motions, furred tongue, and urine loaded with lithates, and as the two often come on simultaneously, it is reasonable to suppose that there is a catarrh both of the alimentary canal and of the skin. Although only an hypothesis, it is highly probable that these conditions favor the development and absorption of toxins in and from the intestinal canal, which directly or indirectly excite the eczema.

Where lithemia, as described by Murchison, is frequently present, such as in patients of the gouty diathesis, there is little doubt that there is a causative relationship between it and eczema. Whilst fully admitting that the gouty state strongly predisposes to eczema, I believe that there is much exaggeration of the frequency of gouty eczema, and that when a middle-aged eczema patient is told that he is suffering from suppressed gout or perverted gout, it is too often only a refuge for the distressed diagnostician. Of course, if the view that all dyspepsia is an inchoate gouty state be accepted, my objection vanishes. How these various disorders produce the eczema is open to difference of opinion; Wilson and others included them under assimilative debility, Tilbury Fox regarded them as instances of retained excreta, which in the blood act as irritants to the tissues.

Put into the language of modern pathology, this would nearly coincide with the absorption of intestinal toxins into the blood, to which allusion has already been made. They may act directly or reflexly upon the nerve centers, and produce dilatation of the capillaries of the region affected. In infantile eczema irritation and consequent catarrh of the alimentary canal are even more common as a cause of eczema than in older people. The imperfect feeding of which infants are too often the victims is a fertile cause of the skin-troubles, and is much more often

the *fons et origo mali* than teething, which, for infantile diseases, often takes the place of "suppressed gout" of the middle-aged; at the same time I cannot go so far as Hebra, who denies that it has anything to do with the matter. I think it often aggravates a pre-existing eczema, and there are other grounds for believing that irritation of the fifth nerve will produce eczema, such as Cavafy's * case, in which eczema followed neuralgia of the second branch of the fifth, and was limited to its area of distribution. In an infant of nine months what appeared to be a scaly eczema came out suddenly after an attack of sickness and diarrhea and formed streaks one-eighth of an inch above and broadening out to half an inch at the wrist in the distribution of the circumflex and radial cutaneous branches. It had not altered two months after its first appearance.† Such cases as these are rare.

The distribution is more frequently in areas governed by common vaso-motor centers than in those of single nerves. The most familiar example is that of the bust and arms, but I have seen it persistently limited to the malar eminences in several successive attacks.

Rickets also is often put forward as a cause of eczema; I believe it is so indirectly in some cases, especially as catarrh of the gastro-intestinal tract is seldom absent in rickets, while the child's powers are much depressed; how far they are dependent upon each other, or upon a common cause, is open to discussion. With regard to the "strumous state," it is an outcome of lowered vitality, and as such is a predisposing cause of eczema; it exercises a modifying influence also upon the kind of inflammation, favoring suppuration, so that it is a predisposing cause of pustular eczema. The special form of eczema in scrofulous patients has already been described (p. 192).

Another class of cases in which eczema appears to be a reflex neurosis is in uterine disorders, which even Hebra admits as an

* *Brit. Med. Jour.*, July 24, 1880; also Montfort and Mirallié's case of eczema in the domain of an ulnar nerve with neuritis and simultaneous cure of the nerve and skin inflammation, *Annales de Derm.*, etc., vol. viii. (1897), p. 1264. A case of eczema in the course of the small sciatic and short saphenous nerves is recorded by Shearer, *Glas. Med. Jour.*, February, 1885, with photograph, but I am not quite sure from the description that it was really an eczema.

† Private case book G., p. 96.

important factor. He and others have known women in whom eczema of the hands was always present in pregnancy, and constituted the earliest reliable sign. The presence of uterine tumors, the climacteric period, the termination of lactation, congestion and subinvolution of the uterus, etc., are further examples of uterine derangements as causes of eczema, which is also not infrequent in chlorotic girls. Reflex neurotic eczema from disease of other viscera is probable, but seldom demonstrable.

Bulkley considers eczema and asthma to be so frequently associated or alternating that he regards asthma, in many cases, as a sort of eczema of the pulmonary mucous membranes. I cannot say that I have found the association frequently, but that a chill will excite a simultaneous inflammation of the skin and mucous membranes is readily intelligible.

Bulkley * is also very strong on disturbances of the nervous system producing what he calls "neurotic eczema," which "affects both sexes and at all ages from the cradle to the grave." He considers dentition and puberty and nerve strain in childhood and adult life as important etiological nerve factors. Leloir and others have adduced striking cases in which nerve shocks or prolonged nervous strain of anxiety or worry have been the immediate antecedents of eczema, often very widely spread, and all dermatologists can confirm this from their own experience. How it produces eczema is not so clear. To admit the facts observed in these cases, but to say that the disease is neurotic dermatitis, and not true eczema, is only juggling with words and begging the question.

Renal Disease. Liveing considers glycosuria and slight albuminuria to be common in chronic eczema of people past middle age. Granular kidney and renal inadequacy I have certainly found in a fair number, but sugar in my experience is rare; however, the following case is an example: A man æt. sixty, who had been subject to eczema, but was in perfect health at the time when he bathed in the sea on a cold day, was unwell all the rest of the day, and on the following morning had spasmodic asthma and bronchitis, and in the evening eczema broke out all over

* Bulkley, "Neurotic Eczema," *Jour. Amer. Med. Assoc.*, April 10, 1898, with many references.

the head and face. His motions were very pale, and he had a small quantity of sugar in the urine, without polyuria, but there was no evidence of gout. In a previous attack of general eczema this man had had white motions for some time.

I have also seen it in association with marked uremic symptoms. Bruhns * cites several cases to prove the converse, viz., that eczema may produce acute nephritis.

When an eczema has once been excited it does not subside as soon as the cause is removed, and the disease will go on indefinitely unless judiciously and perseveringly treated. It is no uncommon history to find a child in his teens who has had eczema more or less from early infancy, and in whom no defect in health to account for it can be discovered.

In adults also we meet with cases where, after correcting every defect discoverable, and every function appears to be duly performed, yet the eczema persists. Often the disease appears to be subsiding under local and other treatment, when the end of the free interval arises, and all one's labor is undone in a single night. That such cases are frequently dependent on a nervous defect, the results of a treatment to be presently discussed strongly corroborate. Hebra placed "faulty innervation," without suggesting its nature, in the highest position as a cause of eczema; this I should indorse, and suggest that the chief factor is a reflex irritation of the nervous centers, producing a dilatation of the capillaries in different regions of the skin, possibly through an inhibitory influence over the vaso-motor center. In some cases this irritation is from a distant organ, like the intestinal canal or uterus; in others it is from the skin itself. All these internal causes Unna disposes of by saying that their presence makes the skin a better nutritive basis for the hypothetical parasite of eczema, but this makes it equally desirable to remove them if possible.

Pathology.—Eczema is a catarrhal inflammation of the skin, analogous to that of mucous membranes. So far all are agreed, but as to the pathogenetic factor or factors the diversity of opinion is as great as ever. The principal theories are the nervous, the parasitic, and the toxic.

That, when not due to a local irritant, it is a tropho-neurosis, either central or peripheral, has been advocated by Hebra, Til-

* Bruhns, *Berlin. klin. Wochenschrift*, 1895, p. 606.

bury Fox, Schwimmer, Leloir, Bulkley, etc., and Marcacci * in a fatal case of universal eczema found changes in the sympathetic. That the nervous system plays an important part in the production of eczema has already been shown under Etiology, but whether it is primary or secondary is open to dispute. If the latter, it might be an important or even necessary factor without invalidating other primary pathogenetic theories.

Unna holds that eczema is a parasitic disease due to the morococcus, as he calls an organism consisting of clusters of cocci which he has found in the epidermis; and he explains the dermal inflammation set up by this epidermal parasite by invoking an irritating toxin derived from the morococcal activity. Unna claims to have produced eczema from morococcus cultures, but, according to Török, it was not a true eczema, but an impetigo. This morococcus has also been found in the vesicles of scabies, in the scales of psoriasis, etc., and it becomes a question whether its widespread existence does not argue more in favor of its banality than of its pathogenic importance. Experimental proof of a toxin from it is wanting.

Leredde is a strong advocate of parasitism in eczema, but imposes reserves in accepting the morococcus as the agent. He thinks that the similarity of effect from such a multiplicity of causes postulates a parasite, but admits that it is inoperative in a normal skin. According to him, local irritants, the invasion of the acarus scabiei, scratching, etc., are only opening doors from the outside to the parasite, and favoring its deeper invasion; gastric fermentations, altered secretions, gouty conditions, etc., are only favoring influences from within. This is convenient at all events, for this parasitic theory is not inconsistent with all the other hypothetic factors having a share in the production of the eczema, only reserving the leading *rôle* for itself, although it is powerless without other factors. The success of antiseptic local treatment is adduced as a proof of this hypothesis.

Whilst fully admitting the importance of antisepticism in eczema, and indeed in all inflammations of the skin where the epidermis is disturbed, it may be explained by the secondary invasion of an inflamed surface, either by organisms from without or by previously present organisms which are harmless in a nor-

* *Giornale italiano delle Malattie ven. e d. pelle*, June number, 1878.

mal skin. Such, we know, are staphylococcus aureus and its congeners, and streptococcus, and all modern authors are agreed that there is secondary invasion by one or more of these organisms, and that their presence has to be reckoned with, both as modifying the clinical aspect and in the indications for local treatment.

At the International Medical Congress in Paris, in 1900, the parasitism of eczema was one of the subjects of discussion, and those who took part in it were almost unanimously against Unna's view. They all agreed that the fluid from the unruptured primary vesicles was amicrobic, and they were all equally unanimously in favor of secondary infection, chiefly by the staphylococcus aureus and the streptococcus. According to Sabouraud, the staphylococcus transforms the eczema vesicle into a pustule, and after proliferating in the vesicle it can then excite in the neighborhood directly, *i. e.*, without primary eczema vesicles, numerous miliary pustules. When the streptococcus invades an eczema it produces, between the primary vesicles, superficial phlyctenulæ below the horny layers which may coalesce and produce extensive superficial erosions with exudation which dries into their yellowish crusts. In uninfected but ruptured eczema vesicles the corresponding depressions are discrete and exude in droplets, but when streptococcal infection occurs the whole surface oozes uniformly. It is to be hoped that these precise differences will be confirmed by other observers. Sabouraud also states that the "morococcus" belongs to the staphylococcus group. The flask bacillus and a small special bacillus are concerned in the seborrheic forms of dermatitis.

The hypothesis of parasites being the sole cause of eczema (the so-called seborrheic eczema excepted) creates, in my opinion, more difficulties than it solves; for amongst many other objections, we must suppose that the parasite is absorbed into the circulation and germinates as in the exanthemata, or how else are we to account for the frequent sudden outbreak of eczema with a symmetrical distribution, in definite vaso-motor regions, such as those of the xerodermia pigmentosa area, the acne rosacea area, etc.; sometimes supervening on a dermatitis from a local irritant? Toxin absorption from the original source of inflammation is the only other plausible hypothesis.

My own view is this: that, while a limited number of cases of local dermatitis indistinguishable from eczemas are parasitic, in most the dermatitis, however caused, only opens the door to parasites whose presence keeps up local irritation, so that their destruction is an important step in the restoration of the skin *ad integrum*. Seborrheic dermatitis is on a different footing, and I admit its local and parasitic nature unreservedly. That eczematous inflammation becomes pustular from cocci I have already stated, and that partial or complete cure results from their destruction. It will thus be seen that in practice there is agreement, while in theory there are differences.

That toxins may and do cause eczema in many cases is more than probable, and their most frequent source is the alimentary canal (auto-toxins), *i. e.*, such a theory accounts for most of the clinical symptoms, and they may act by damaging the nutrition of the tissues directly or indirectly from the toxic effect on the nerves of the affected area. At the same time it is as difficult to afford definite proof of this theory as of any other. Believers in the parasitic theory would say that toxins of local manufacture, *i. e.*, at the site of the dermatitis, play an important part, and indeed, for the morococcus such a theory is essential to make it viable as a pathogenic agent.

There remains the possibility that eczema is due to different pathogenetic agents, but that they all act through the nervous system.

To show the difficulties of each theory, the following example may be taken. A man given to alcoholic excess sustained a contusion of the left leg, to which he applied a weak solution of arnica. A smart dermatitis was excited on the leg, which looked like a diffuse, slightly discharging, and scaly eczema, and nothing in its appearance suggested a local irritant. Three days after the leg inflamed, the orbits swelled up considerably, and the skin there was bright red. The back of the forearms and hands presented fine acuminate papules on their extensor aspect, all quite symmetrical.

On the parasitic theory it must be supposed that the irritant brought into pathogenic activity an organism already in the skin, and that this was multiplied and absorbed into the systemic circulation, whence it was carried to the symmetrically inflamed parts, or that at the part irritated the parasite

(? morococcus) produced a toxin which acted on the common vaso-motor center for the face and back of the forearms and hands.

On the nervous theory it would be sufficient to suppose that a local irritant produced, by reflex action on the vaso-motor center above mentioned, the symmetrical inflammation described. On the auto-toxin theory the local irritant may have acted by leading to either the production or absorption of a toxin from the alimentary canal by a reflex nerve action, just as chills of the surface appear to produce similar results in some cases.

In all these theories the predisposition or vulnerability from alcoholic excess must be taken into account, weakening the resistance of the tissues of skin or nerve, or producing gastro-intestinal catarrh, and fermentative changes favoring toxin production, according to the theoretic view taken. This example shows how each theory requires a plentiful amount of supposition to get over its deficiencies, and also that at present we are far from a perfect and provable working theory.

Anatomy.—This has been investigated by Simon, Hebra, Wedl, Rindfleisch, Kaposi, Neumann, Biesiadecki, Robinson of New York, Leloir and Vidal, Unna, and myself. In acute eczema the changes are chiefly and primarily in the papillary layer, afterwards in the epidermis, and, if of sufficient duration, the deep portion of the corium may be involved.

In papular eczema the inflammation is in circumscribed portions of the skin, and Robinson says is primarily confined to the follicles, especially the hair follicles, while in the other forms it is more or less diffuse. Unna makes practically no distinction between eczema and seborrheic dermatitis, and lays great stress on the changes in the epidermic cells, which are swollen by imbibition of fluid (inflammatory edema), and their normal functions otherwise interfered with. Thus the upper cells of the prickle layer do not undergo normal keratinization (*parakeratosis*), but remain moist in their interior, adhere into masses, and form scales in the subacute and chronic forms. In the more acute forms the upper layers are lifted off by the fluid beneath before many changes have occurred. The deeper prickle cells proliferate as well as swell (*acanthosis*), with multiplication and diffusion of mitoses. When there is enough fluid to form vesicles the prickle cells themselves are elongated and almost thread-like, where the vesicles are large, and the vesicles are formed in the upper part of the rete or just beneath the horny layer, by the serum from the vessels making its way between the cells, and raising up the horny layer. Besides the serum they contain loose prickle cells, and some of these swell from imbibition, rupture, and impart the gummy character to the vesicular contents (Robinson). In the papular and

squamous forms the fluid exudation is slight; in the pustule it is abundant, and there is more cell emigration and proliferation, and therefore more infiltration of the corium and epidermis.

Spindle cells make their way into the rete, and form a close network between the cells, the meshes of which are filled with the prickle cells, this network extending sometimes right up to the horny layer.

The papillæ are swollen in all directions, the vessels dilated, the connective tissue corpuscles increased in size and number, and the fibrous bundles swollen by imbibition and compressed; these changes giving strong evidence of serous exudation.

Chronic Eczema Rubrum.—Robinson says the previously described changes in the corium are here more marked and deeper, and the lowest layers of the prickle cells are so altered that the lower border is badly defined from the corium, while the upper border is very irregular, from the changes in the horny layer, which is broken up into fragments consisting of nucleated cells adhering together. In chronic eczema squamosum there is proliferation and desquamation of the horny layer, while the deep part of the prickle layer is less altered, the corium and papillæ are infiltrated with round cells, the vessels are dilated, and, in short, there are all the usual changes of a less active inflammation.

The longer the duration of the process the more marked are the secondary changes, as exemplified in Figs. 11 and 12, representing E. palmare. The papillæ are so much larger; the cell infiltration of the corium is more marked and goes deeper, Neumann and myself having found it even between the fat cells; he also found, not only the blood, but even the lymph-vessel loops elongated and dilated at the end. This enlargement of the papillæ may go to a papillomatous extent, as before described in the clinical history; of this Robinson * gives a figure. When the lymphatic flow is impeded the elephantiasic condition is induced. On the other hand, Rindfleisch † has described, in some cases, great development of connective tissue, obliteration of vessels, and flattening of papillæ.

Diagnosis.—The diagnosis of eczema may be very easy or very difficult. It is easy when any one of the four primary forms is in a typical condition; or given the presence, or the distinct history of the presence, of a continuous discharge which stains and stiffens linen, whether serous or purulent, and the diagnosis is made; for although there are a large number of eruptions in which there are vesicles or pustules, they either dry up without rupturing, or, with the exception of impetigo contagiosa, do so as soon as their contents have been evacuated. On the other hand, the absence of discharge does not neces-

* Robinson, p. 318.

† Rindfleisch, "Path. Histology," *Syd. Soc. Trans.*, vol. i. p. 349.

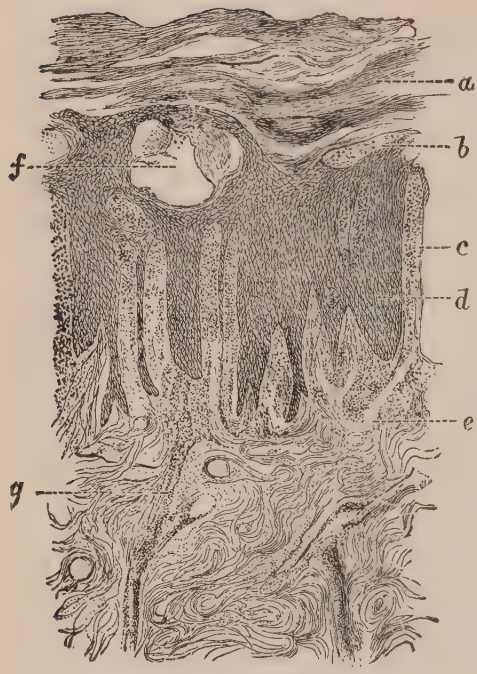


Fig. 13.

CHRONIC ECZEMA FROM THE CENTER OF THE PALM. × 50.

Fig. 13.—Superficial portion.

a. Horny layer greatly thickened.

b. Commencing vesicle.

c. Round cell effusion into papilla.

d. Enormously thickened prickle cell layer. The inter-papillary portions are very much elongated, producing corresponding enlargement of the papillæ as at *c*.

e. Dilated papillary vessels.

f. Vesicle in the rete, in the course of a sweat duct.

g. Sweat duct with round cell infiltration in and about it, throughout its course. In other parts the cell effusion is almost limited to the papillary layer.

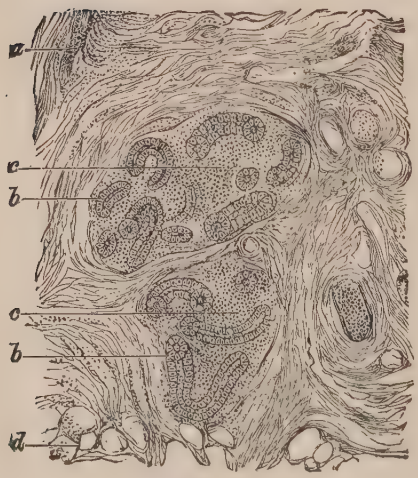


Fig. 14.

Fig. 14.—Deep portion corresponding with Fig. 13. × 50.

a. Continuation of sweat duct *g* in Fig. 13.

bb. Sweat coil.

cc. Abundant cell effusion in and around sweat coil.

d. Fat with scanty cell effusion round the fat cells.

sarily imply the absence of eczema, for, like pleurisy, it may be with or without free effusion of serum.

The vesicular form of eczema may be mistaken for scabies, herpes, and, when universal and weeping, for pemphigus foliaceus; the pustular form, for impetigo contagiosa, tinea favosa of the scalp, sycosis barbæ, and pustular syphilis of the scalp; the papular, for lichen acuminatus, papular urticaria, and papular syphilids; the erythematous, for E. simplex and erysipelas; E. rubrum of the legs may also be mistaken for erysipelas; E. squamosum, for psoriasis and tinea circinata, and when on the palm, for the palmar syphilid.

The diagnosis of the eczemaform seborrheide from eczema is given with the Seborrheides.

Scabies v. *Eczema.*—These two diseases very closely resemble each other, and often give rise to great difficulty in diagnosis; and this is not surprising, since nearly all the lesions of scabies are individually of an eczematous character.

Both itch much at night and both have vesicles, pustules, crusts, and scales. Where there are well-marked burrows from which an acarus can be picked out, or where there is evidence of contagion, there is of course no difficulty, but in an ill-marked case, especially when thrown off one's guard by the patient being obviously a clean person, or of the well-to-do classes, mistakes often arise.

While the individual lesions of the two diseases, with the exception of the acarian burrows, resemble each other, the general picture is very different, and if the rule of seeing the whole of the eruption were more generally followed, as it can be in males, mistakes would seldom occur. The general picture is especially useful where the burrows have not been developed; or where they have been destroyed or obscured by vigorous scratching; or from the nature of the employment, as in bricklayers, washerwomen, etc., the two points which afford most assistance are the *positions* and *scattered* character of the eruption. Scabies particularly affects the hands, especially between the fingers (an eczema position also), the flexure of the wrists, the axillæ, the pubic region, especially the penis, and inner sides of the thighs in adults, while in infants the buttocks, feet, and hands are the favorable positions. If an eruption is scattered irregularly in any of these positions, it is of itself a strong pre-

sumption in favor of scabies. Eczema also comes in these situations, but the lesions are always more or less grouped or patchy. A pustular eruption on the hands or feet of an infant is nine times out of ten due to scabies.

Where the evidence for either is finely balanced, the effect of the treatment for scabies will decide the matter in a week.

Pustular Syphilids of the scalp are often mistaken for pustular eczema. There is here superficial ulceration; and the loss of substance, either past or present (and scars should always be looked for), is decisive. The crusts may require to be removed before a diagnosis can be made, and this is always the safest course to pursue. The offensive odor of the pustular syphilid should excite suspicion, and further, the lesions are generally more circumscribed than those of eczema.

Coccogenic Sycosis Barbæ bears a close resemblance to the later stage of eczema of the beard and whiskers. At the commencement, in eczema, there is inflammation, and perhaps vesicles, between the hairs, and the eruption nearly always extends to the neighboring hairless situations; but as time goes on this may get well before the hairy part, and the eczema clearing up between the hairs, there is only a pustular folliculitis left, hardly distinguishable from sycosis. At a later stage the two conditions are identical, the whole skin being infiltrated, of a deep red color, with crops of follicular pustules from time to time, and no doubt directly dependent on pus cocci. The treatment is also identical. Often, however, the eczema inflammation can be shown to be more superficial at first. On extracting the hairs some of them will be found to be infiltrated at the root, only a short distance down, while in sycosis the whole root-sheath is always swollen.

Tinea Favosa of the scalp is likely to be mistaken for eczema, only when its possible existence is forgotten for the moment. The crusts are a more decided yellow, and often powdery; some at least will be cup-shaped, and there may be atrophic scarring. If there is still doubt, the microscope would be decisive as to the presence of a fungus, though culture might be necessary to prove the exact nature of it.

Herpes Zoster will seldom give much trouble; the definite arrangement of the patches in the course of a nerve will be quite sufficient; also the vesicles being much larger, except at

the commencement, and the way in which they dry up without discharging, or at least without continuous discharge, constitute distinguishing features. This last symptom is a distinction between eczema and the other forms of herpes, viz., H. facialis and genitalis, which are more like eczema than zoster is, the vesicles of H. genitalis being very small. Their position, the circumstances under which they occur, and their short course, will be sufficient to prevent error.

Pemphigus Foliaceus is very like a general weeping eczema; the diagnosis is given under Pemphigus.

Impetigo Contagiosa, when due to pediculi capitis, its most common cause, is very like pustular eczema of the scalp. The localization is an important point; the eruption always predominates in the occipital region; at the most, a few isolated scabbed spots exist in the other parts of the head; eczema is scarcely ever limited in this way, even in isolated spots; nits would also be discoverable, and the effect of treatment would be conclusive; impetigo contagiosa is curable in a week or two, while eczema nearly always takes longer. When impetigo contagiosa is on the face, the fact that there are always isolated lesions away from the main patch is sufficient.

Lichen Acuminatus and *Lichen Planus*.—See those diseases.

Papular Urticaria.—Eczema lesions are not infrequently mixed up with those of urticaria. In the papular form of urticaria the lesions are never grouped, as in eczema; they are rather larger, not so hyperemic, and at least, the *history* of wheals is obtainable. When the scab-topped papules are chiefly distributed on the loins of a child, wheals should be always inquired for.

Large Follicular Syphilid v. *Eczema Papulosum*.—This syphilid always occurs in the early part of the secondary period,—that is, within about six months of infection,—and other syphilitic lesions are nearly always present. In the large follicular syphilid the papules are in groups of three to seven, which is very characteristic; they are also larger, a browner red, and do not itch.

Erythema Simplex is not easily mistaken for eczema. The eruption is not in the least scaly, seldom itches, there is no inflammatory edema, and all the other characters of eczema are wanting.

Erysipelas v. *E. Erythematosum.*—When the face is affected the latter is often mistaken for erysipelas on account of the redness and edema, but there are no constitutional symptoms as in erysipelas; it does not begin at a special part like the orbit, its borders are never defined, it is usually bilateral, the surface is rough from the first, while in erysipelas it is shining, smooth, and tender, and desquamation only appears after the departure of the inflammation. In E. rubrum of the legs there is always profuse weeping, and the chronic course of the eruption ought to prevent mistakes.

Psoriasis v. *Eczema.*—It is only when eczema is in dry, scaly, circumscribed patches, or when psoriasis is unusually hyperemic, that mistakes are liable to occur. The diagnosis is given under Psoriasis.

Tinea Circinata.—No mistake can occur when the tinea is present in its typical form of discrete circles made up of papules with a clear center; but when there is a uniformly scaly patch, irregular in outline, it may be impossible, except with the microscope, to distinguish between them. Often, however, there is ringworm in the scalp, or a more typical patch elsewhere, or a history of contagion to help out the diagnosis. Moreover, eczema is generally symmetrical to some extent, and the border less defined. A sharply defined border to a solitary scaly patch should excite suspicion of its not being eczema.

Prognosis.—Eczema more frequently runs a chronic than an acute course, and, if left to itself, may persist indefinitely. It is always amenable to a persevering, judicious treatment, though when there are extensive secondary changes these may not always be removable.

The elements for prognosis to be considered are: how far the eczema depends on some removable or irremovable defect in the general health, or other condition, *e. g.*, varicose veins; the form of the disease; the mode of progress; the history of previous attacks, if any; the duration and intensity of the inflammation; the position of the eruption; and the amount and character of the secondary changes.

Thus, a gouty eczema in an old person, or where elimination is defective, as in granular kidney, is extremely likely to recur, or where there is a chronic cause of worry or anxiety, or other points in the external conditions are bad, the prognosis is un-

favorable for the removal of the eruption. Papular is usually more obstinate than acute vesicular eczema. When every few days an outbreak occurs without apparent cause, when the eruption is of long standing, and elephantiasis, papillary hypertrophy, or great induration has set in, or when it is on the scrotum, hairy parts of the face, or palms, the prognosis is more or less unfavorable, at least for a time, though there are few indeed which do not yield at last. In general eczema a few cases go on to pityriasis rubra, when the prognosis will be the same as for that disease.

Treatment.—The treatment of eczema is very important, and its mastery will give the key to the treatment of three-fourths of the inflammatory diseases of the skin. The first point to investigate in all cases is the cause of the eczema; *e. g.*, if it is limited to the hands, a local cause, especially such as would be connected with the occupation of the patient, would naturally suggest itself. Failing this, investigation should be made into the general health, the habits, and surroundings of the patient, and persevering attempts made to remove, modify, or neutralize any injurious influences, the great aim being to remove or guard against depressing conditions and all sources of irritation, whether internal or external. With regard to these points, it is impossible to do more than give a few hints as to the lines on which to proceed, and which are likely to be beneficial in the majority of cases. There are no specifics for eczema, and as regards general treatment, the soundest practitioner for disease in all forms will be the most successful. In all cases the condition of the alimentary canal must meet with our first attention. Of the derangements there, constipation is the most common and most injurious, and success can scarcely be hoped for unless that is overcome; when chronic, but slight, the compound sulphur lozenges, or if obstinate, the aloes, nux vomica, and belladonna pill (Pills, F. 1) taken for a long period, are most useful, coupled with all the well-known rules for meeting that condition. As temporary adjuncts, the compound liquorice powder, or the liquid extract of cascara sagrada, may be given, while the aperient mineral waters, such as Carlsbad, Hunyadi Janos, Æsculap, Apenta, Friedrichshall, Püllna, etc., are often required two or three times a week; these waters are especially useful where there is passive congestion

of the liver. For infants, equal parts of the infusion of gentian and senna, a dram to be taken three times a day, to which, in obstinate cases, two or three drops of tincture of belladonna and tincture of podophyllin may be added, is a good formula, but it is disagreeable for a child to take. Liquid extract of cascara ℥ij to ℥v, tincture of belladonna ℥iij, and compound infusion of orange ʒij, is better. Where there is dyspepsia, alkalies and bitters, bicarbonate of soda for the majority and of potash for the gouty, is the usual treatment required. Bismuth is useful with pyrosis or irritable tongue, and a small dose of strychnia or tincture of nux vomica in flatulent or atonic dyspepia.

In children, in whom catarrh of the bowels is so common, sodæ bicarb. gr. 5, sp. chloroform, ℥j, aquæ anethi dil. ʒj, for a child a year old, answers well in many cases where the motions are loose, offensive, and slimy, and frequently a grain of hydrarg. c. cret. three times a week may supplement the mixture. Of course these are only given as examples of treatment for the common run of cases. For most patients the diet should be carefully regulated; food in which sugar is a feature and all fermentable articles of diet should be prohibited, sugar should be taken in very moderate quantities or not at all, especially with hot fluids, highly seasoned and made dishes avoided, and a dietary laid down, plain and nutritious, but with sufficient variety not to pall upon the appetite. Salt meats are only contra-indicated because, as a rule, they are difficult of digestion and less nutritious, weight for weight, than fresh meat. The salt itself is not injurious in moderate quantity.

Alcohol must always be taken sparingly, as, except in very moderate quantities, it dilates the vessels of the skin, and therefore increases the blood in the too congested skin, and aggravates the itching; beer and the stronger wines are seldom admissible; sound clarets, hocks, and plain spirits freely diluted are the least objectionable, but in a large number of cases alcohol is better avoided altogether. In gouty cases the regimen and medicinal treatment for that condition must be adopted, taking care to insure a reduction of the amount of nitrogenous food on the one hand, and active exercise and means for promoting increased oxidation on the other. A course of alkalies, with saline aperients occasionally, is what is

usually indicated; but colchicum need only be given when there is high pulse tension and other indications of a gouty outbreak. For the want of tone and general debility, so often exhibited by eczema patients, the mineral acids and nux vomica, or quinine, or where there is anemia, iron, with plenty of outdoor exercise, short of fatigue, are the measures generally demanded, and cod-liver oil is often highly beneficial.

In children, especially if rickety or strumous, if the bowels and diet have been regulated, iron, such as the syrup of the iodid, the ammonio-citrate, or Parrish's food, with cod-liver oil and general hygiene, are the means best suited to combat such conditions. In all obstinate cases in adults the urine should be examined for albumin, sugar, and an excess of lithates or phosphates; indeed, it should be done as a matter of routine. In short, until every function is duly performed and the patient's health has attained to the highest point of which his organization and circumstances render him capable, the practitioner should not rest satisfied.

Speaking generally, in an acute case seen early, saline aperients are good treatment at first, and later on tonics suited to the patient's special conditions; while in cases of long standing diuretics take a high place in relieving the skin troubles.

But there are cases in which no particular departure from health can be discovered, or where such departure has been rectified, and yet the eczema remains uncured, owing to fresh attacks at short intervals; and then it is usual to try empirical remedies. Arsenic has a high reputation in this connection; indeed, it is but too common a practice to resort to it whenever there is the least hitch in the progress of the case, but in my experience it is a most disappointing drug in eczema. I do not doubt that a certain number of cases get well under arsenic, when it is combined with local treatment, but whether as *post* or *propter hoc*, I am not prepared to say; but it has nearly always failed in the only cases in which I have wanted its assistance, viz., those in which, what I venture to call the rational treatment has previously been unsuccessful, probably not more than three per cent. in all cases.

Hutchinson and Malcolm Morris strongly advocate vinum antim. tart. in small doses, about ℥v three times a day. It is an old treatment revived, and I have certainly found it service-

able, but in a more limited number of cases than they appear to have done. It acts most favorably in acute cases, in a fairly robust individual; but if given to a debilitated subject, or in an otherwise unsuitable case, it will not only aggravate the eczema already present, but will excite it in fresh places. This I have seen several times, and regard it, therefore, as a drug powerful for good or evil, and consequently to be used only in carefully selected cases. Hutchinson, however, uses it freely at all ages, and claims signal success for it in a large proportion of cases. It appears to suit a good many cases of infantile eczema in drop doses three times a day.

Another drug which I have found beneficial in uncomplicated cases, where there is no irritation of the alimentary canal or urinary organs, is spirit of turpentine. In many obstinate cases it has acted most satisfactorily, even when no local treatment has been employed. There is rather a prejudice against it, on account of its irritating effect in some cases on the urinary passages; but if given with proper precautions such irritation will be rarely seen, and will never be very great. It should be made into an emulsion with mucilage, and given three times a day, after meals. The dose at first should not exceed ten minims, and the last dose should be taken not later than 6 P. M., as discomfort on micturition in the morning sometimes follows a late dose. The quantity of urine passed is often diminished at first, with copious deposit of lithates; therefore diluents, such as barley water, should be drunk freely, not less than a quart a day. This is very important, and the medicine should not be commenced until the barley water is ready. Unless the patient is very intolerant, which is not often the case, the dose may be increased by five minims at a time up to twenty or thirty minims, and but few complain seriously of the taste, which can be masked by various flavoring agents, notably essence of lemon.

But there are a few cases where the Pharmacopeia has been ransacked in vain, for every few days exacerbations set in, and undo over and over again the good effect of the local treatment. In such cases I endeavored to get at the vaso-motor centers of the part by applying counter-irritation over them. This proved more successful than I had expected, and the result was too immediate to doubt the connection between cause and effect.

in the upper half of the body it was used to the nape of the neck; in the lower, over the lumbar enlargement, *i. e.*, the last dorsal and first lumbar vertebræ. Sometimes dry heat, in others a strip of mustard leaf, was used, or the liquor epispasticus was painted on. The application should be made as soon as the patient has warning, by the increased heat and irritation, that an exacerbation is impending. The nocturnal exacerbations were either stopped or greatly mitigated, and by repetition, in some cases, a complete cure was effected, after the eruption had lasted for years. No eczema was ever excited in the neighborhood of the counter-irritant, even after severe blistering. The relief of the itching was so entire and immediate that the patient, after the first time, welcomed the repetition of the treatment. Icebags to the spine have also been suggested for these cases.

Local Treatment.—This is as important as the general treatment. Indeed, Hebra and the Vienna school place it first, and rely almost exclusively upon it. The judicious combination of the two finds most favor in English eyes, and appears to be at once the most rational and rapidly efficacious.

The number of local remedies and plans of treatment for eczema is legion, and testifies to the troublesome and obstinate character of the complaint in many instances. I propose to limit myself either to those methods of treatment which have been most successful in my experience, or on which many authors of repute have placed their *imprimatur*.

Except where the inflammation has been excited by parasites, the local treatment is independent of the cause. The points to consider are the character and intensity of the inflammation, its position, and the secondary changes which have ensued.

There are certain things which are always to be avoided. Eczema should never be washed with plain water, as most waters contain lime, which is irritating whenever there is any active inflammation, and will sometimes, if persisted in, render success impossible. Distilled water, pure water with scarcely any salts, such as that of Glasgow and Dublin, carefully collected rain water, are less injurious, also water which has been boiled and stood long enough to deposit the lime may be sometimes used with impunity.

The inflamed skin should always be protected from the air, and when it is on the face the patient should not go out in an east or northeast wind in this country, and should not be sent to the seaside as long as the eczema is out anywhere or has been out very recently. There are some exceptions to this. Thus, in strumous subjects, or some others who require bracing very much, the benefit to the general health more than counterbalances the local injurious effect, though even such patients would do better in an inland bracing climate.

The first positive procedure in all cases should be to remove the crusts and scales completely, so that the remedy may be brought into absolute contact with the diseased surface. This may be done in various ways. The most common plan is to poultice the part for three or four hours. It answers well enough with care, but is so often overdone, and is then so injurious, that it is safer to avoid it altogether except in the form of the boric acid and starch poultice (F. Poultices), which Jamieson employs extensively. Plain almond or olive oil applied constantly on strips of flannel, until the crusts and scales can be softened enough to enable them to be readily detached, is the plan I prefer. Another good plan is to soak them off with decoction of marshmallow or thin gruel, to which ʒij of bicarbonate of soda to a quart are added. Some recommend india-rubber envelopes, but the parts must then, immediately after their removal, be wrapped in ointment, or the skin will crack as it dries. Where the crusts or scales are moderate in amount, the ointment selected may be applied at once, removing fresh scales night and morning, before the fresh dressing. When all the crusts are removed the inflamed part is ready for the special medication.

The medicaments may be prescribed in the form of desiccant powders, lotions, liniments, pastes (hard and soft), and ointments. The drugs employed have soothing, astringent, antiseptic, stimulating, caustic, or keratolytic properties, and in selecting the remedy deemed appropriate the points to consider are the character and intensity of the inflammation, especially as to the quantity or absence of discharge, and the position and secondary changes which have ensued, for, except where the inflammation is excited by parasites, the local treatment is independent of the cause. Speaking generally, in acute

or subacute eczema (as regards degree, not duration) the applications should be continuous, while in the drier and more chronic forms they are intermittent. The objects are to secure equality of temperature and protection from the air and the injurious organisms it may contain, *i. e.*, to keep the part aseptic; to constringe the dilated vessels and allow the excoriated part to heal under the dressing; or, in the chronic forms, to remove the surface layers of thickened epidermis and sterilize the layers beneath. The treatment for special positions will be considered separately. In all cases, when practicable, the patient's convenience should be consulted, as he will often otherwise not carry out his instructions faithfully; besides, for the poor to give up working is often to give up eating.

As a rule, lotions, unless they require to be applied constantly, are more convenient than ointments. Lotions or dusting powders are generally preferable where the discharge is very profuse, ointments may be used where the discharge is moderate, soft pastes where the discharge is slight, and hard pastes are suitable for dry areas. When a large moist surface has to be continuously enveloped, liniments find their place (see also p. 87).

As long as there is great hyperemia and discharge, soothing remedies are safer, more grateful to the patient, never do harm, and are generally the most efficacious; non-irritating antiseptics may be usefully added. They act, too, chiefly by protecting the part from the air, etc.

On the other hand, sometimes bolder measures, especially tar in some form, may effect a rapid cure in a comparatively acute case; but it is always risky in the early stage—may aggravate the inflammation, and thus destroy the patient's confidence at the commencement. It is a safe rule never to use strong remedies when the patient first comes under treatment, and until some knowledge of what his skin will bear has been gained. Stimulating, caustic, or keratolytic treatment is required in chronic, indolent, scaly patches, or where there is thickening and great itching.

The soothing remedies are mere emollients, such as boric acid and starch poultices, marshmallow decoction, or thin gruel with about ʒij of bicarbonate or biborate of soda to a quart.

These latter make good washes where cleansing is necessary. Other emollients are olive and almond oil, ol. Deelinæ, and other forms of heavy paraffin oils, or simple unguents. Those which are also astringents are various preparations of zinc, lead, bismuth, boric acid, alum, etc. Stimulating antiseptics are generally chosen from mercurial preparations, especially the ammoniated, the yellow oxid, the nitrate or oleate. Nitrate of silver, protargol, largin, resorcin, salicylic acid, ichthyol, thiol, etc., or tar or its derivatives in some form, are also used. Others less frequently employed will be alluded to presently. Lotions, such as calamin and bismuth, which contain suspended powders, are dabbed on and allowed to dry, leaving a powdery deposit which protects the inflamed skin. They are chiefly adapted for parts exposed to the air, and where the discharge is trifling or absent. They should not be used on the scalp, as they clog up the hair in a very disagreeable manner. In recurrent papular eczema they give great relief to the pruritus, and if used early and diligently, will cut short the attack in many cases. Soothing astringent lotions, such as the liquor or the glycerin of the subacetate or lactate of lead lotions, act best when continuously applied, so that the part may be rested and protected.

Strong lotions, such as those of tar, nitrate of silver, permanganate of potash, etc., require painting on once, twice, or thrice a day, according to their strength and the object in view.

Soothing ointments and liniments should be applied thickly spread on lint or linen in strips, and then bandaged over, so that they may be closely and continuously applied to the part, and the ointment should be renewed about twice a day. Such applications merely smeared on twice a day are useless. Stimulating antiseptic ointments, unless very weak, seldom require continuous application. They may be used once or twice a day, according to the amount of stimulation required; but the part should always be protected from the air in the interval.

Soft pastes, such as Lassar's zinc, starch, and vaselin, with one or two per cent. salicylic acid, are very valuable in subacute eczema without much discharge, but the salicylic acid must sometimes be omitted for a time, and boric acid, gr. 10 to 20, substituted. Ihle's (Pastes, F. 4) is a similar paste, with

resorcin and some lanolin. These and similar applications should be spread thickly on the part, and then covered with a many-tailed bandage of nainsook, butter-cloth, or similar porous material. The firm pastes contain gelatin and glycerin and zinc as a basis. Unna's (Pastes, F. 1) is one of the best; he generally adds ichthyol two per cent. If that kind of addition is required I prefer thiol, as it has no smell. Other antiseptics may be added as required. These pastes suit dry surfaces, or where there is but little discharge. The gallipot or tin is placed in boiling water, and the melted paste painted on with a stiff brush and dabbed with cotton wool to prevent the surface sticking to the clothing, etc. Pick's and Elliot's tragacanth varnishes (Pastes, F. 6 and 7) may be used in similar cases. They are easier to apply, as there is no melting required; but, on the whole, I like the gelatin preparation best, as it does not make the part feel stiff.

Where the discharge is very profuse, desiccating powders may answer best; they should be freely dredged on several times a day, removing the old powder where it tends to cake from the disccharge. Or they may be applied in Unna's bags (see p. 88). Except in the intertriginous eczema in the folds of fat people, I do not use powders very often where there is profuse discharge, as the caking of the discharge and the powder is much disliked by most patients. The powders most used are starch, kaolin, white peat, French chalk, lycopodium, etc., to which are added oxid of zinc, equal parts, the powdered oleate of zinc, one to three or four, finely ground boric acid, one to four or six; occasionally a little creasote may be beneficial, but it should be used with caution.

In a widely spread eczema, where the discharge is not too profuse, swathing the patient in bandages dipped in calamin liniment is often soothing, efficacious, and convenient. When the discharge is very great, lactate of lead, one to fifteen, or glycerin of the subacetate, one to ten, would probably be most suitable; they should be warmed slightly, lest a chill should be produced by applying a cold lotion over a very wide surface. Even when an ointment might be otherwise suitable, to spread so much in strips would require a special attendant. When the active stage of the inflammation has ceased in a part of moderate extent, and there are only scaliness and moderate

hyperemia, mercurial preparations often suit best. Gr. 10 up to ʒj to the ʒj of the ammoniated or yellow oxid, alone or in combination, are the strengths chiefly used; they are very useful for scaly patches and for the head. The nitrate is generally used in the proportion of ʒj of the ointment to ʒvij of lard or white vaselin; it may be used in the same cases as the other mercurial applications. It is often a good plan, when the activity of the inflammation has subsided, to add a small proportion of the mercurial to the soothing remedy and increase it gradually. The oleate of mercury is not often used stronger than one or two per cent. in localized patches. To avoid salivation, mercurial applications must not be applied continuously or over too large an area.

In pustular eczema, wherever situated, iodoform is the best remedy; 5 to 10 grains to an ounce of lard or any astringent ointment, such as zinc or lead, soon destroy the pus cocci, and alter the character of the eruption to a serous or dry eczema. Iodol or aristol act in a similar way, but are much less powerful and certain in their action, but I have found europhen useful; it is rather more irritating than iodoform, and one per cent. ointments are quite strong enough. Loretin is also useful, but rather irritating to some skins, even in one per cent. strength.

Tar, in some form, is one of the most efficacious remedies in eczema, if used at the right stage, a point which requires much experience, and it is best to try it over a small area and see how it suits, before extending its use to the entire surface, for it is almost as powerful for harm as it is for good if wrongly used. It is not indicated until the acute stage is passed, and although it may sometimes be used when there is still discharge, there is always some risk in such cases. In the form of liquor carbonis detergens with subacetate of lead Mr. Hutchinson uses it in nearly all cases, only varying its dilution.

It is in the squamous and papular forms that it acts best, relieving the intense irritation better than anything else. It may be used in a mild form, by adding a small quantity to the astringent ointments, *e. g.*, ʒss or ʒj of the ung. picis, ♏iij to ♏x of ol. cadini or rusci, to ʒj of the weaker ointment, or in a lotion such as liquor plumbi subacetatis, liquor carbonis detergens, et glycerini āā ʒij, aquam ad ʒviij, or even weaker, applied three or four times a day, or carbolic acid ♏v to ʒj of glycerin and rose

water; or it may be used in a more vigorous manner, as recommended by Hebra: the pure wood tar, or ol. rusci or ol. cadini, is to be brushed firmly into a patch after the complete removal of the scales, and reapplied until a good thick coat of it adheres to the skin, and it is then allowed to separate spontaneously; if there is still much redness and desquamation, or weeping points and much itching, the tar must be painted on again. This kind of treatment is best suited for indolent patches, and the tar must be brushed in vigorously. For my own part, instead of letting the tar separate spontaneously, I prefer to let it be soaked off immediately by immersion of the patient or the limb in warm water for an hour or two; in short, what is called a tar bath. Or, where there is only a small area, the tar may be soaked off with strips of flannel dipped in olive oil.

This is a most valuable treatment for chronic patches which have existed perhaps for many years. For scaly patches, without much infiltration, merely painting on a lotion of liquor carbonis detergens and liquor plumbi subacetatis in equal parts, or nitrate of silver, gr. 10 or gr. 15 to ℥j of nitrous ether, is often sufficient, and relieves the itching, though it makes the skin tingle for a minute or two. Hebra's formula for scaly eczema of the face is a good one; acidi carbolici ♏ij, glycerini, etheris āā ♏j, spirit. vini rect. ℥vj; but it must be used with caution at first until it is seen to suit, and, like all these strong preparations, should never be used until milder measures have been tried and the patient's confidence is gained.

Sulphur has a past reputation for eczema; locally, I rarely use it except as a weak ointment in E. barbæ in the later stage, and in seborrheic dermatitis. Thilanin,* which contains three per cent. of sulphur, is an improved form of applying the drug, and is less irritating. Sulphur baths in the form of sulphid of potassium ℥j to ℥iv to thirty gallons are sometimes useful in the chronic folliculitis of the thighs, left sometimes after an acute eczema of those parts.

For similar patches, salicylic acid may be usefully employed to promote the removal of the thickened skin, and I have sometimes blistered the actual patch with great advantage. R.

* Thilanin is obtained by the action of sulphur on lanolin, and forms yellowish-brown pomade of the consistence of lanolin. It was introduced to notice by E. Saalfeld.

Simon of Birmingham advocates pilocarpin injections 1-8 grain for these cases.

Sulphur springs, such as Harrogate, Strathpeffer, Aix-la-Chapelle, and Luchon, may be used in similar cases, and in chronic eczema generally; internally, they may be taken in gouty and rheumatic cases. As a rule, the local use of sulphur aggravates all except seborrheic and chronic eczema. The alkaline waters of Ems, Royat, and Vichy are more suitable than the sulphur springs, as a rule.

Hebra's soap treatment is very valuable for patches of old standing with great infiltration, such as are often seen about the legs and wrists. Have strips of lint or linen ready spread with oleate of zinc or lead ointment; then moisten a piece of flannel with water and spread a piece of soft soap as big as a walnut upon it, or dip it into the spiritus saponis alkalinus and rub firmly for some minutes, wetting the flannel with water occasionally, until all the scales are removed and the part is red with excoriated oozing points; then wash off the soap, dry the part rapidly, and immediately apply the ointment. The treatment may be repeated twice a day as long as there are any oozing red points left after the friction. In some cases the addition of oil of cade, ʒij to the ℥j of the soap liniment, is useful where there is much induration.

I have also found the treatment of Beissel of Aix-la-Chapelle for chronic local eczema a good one: The crusts are thoroughly soaked in oil at bedtime, and completely removed the next morning by alkaline lotions, such as bicarbonate of soda, ʒj to ℥vj. The reddened and perhaps freely discharging surface is then carefully dried, and painted with a one in ten solution of permanganate of potash; the painting is to be repeated once or twice a day, until a black scale of the thickness of a sheet of paper forms over the eczematous spot. At the end of a week the black crust is allowed to separate, and with the exception of perhaps a few fissures the cure is usually complete. This treatment can only be used where the part is covered, on account of the black disfigurement.

The treatment of White of Boston is strongly recommended by Duhring for acute eczema. Lotio nigra of full strength, or diluted with equal parts of lime water, is applied to the part with a sponge for a quarter of an hour, allowing the black

powder to remain on; then a little zinc ointment is smeared over, and the process is to be repeated every four or six hours.

Ichthyol is strongly recommended by Unna of Hamburg for the treatment of eczema, and is largely employed by many in spite of its smell and dark color. Either as ointment or lotion, as it forms an emulsion with water, it is no doubt useful in obstinate moist circumscribed patches, such as are often seen on the hands and arms, and it is used from five to fifty per cent., the weaker preparations being preferable where there is discharge. Unna begins with a strong preparation and gradually reduces the strength. Ichthyol is least objectionable in combination with the gelatin zinc paste, but it can also be used in combination with soft pastes like Lassar's, or in liniments like that of calamin.

Thiol has a similar action, and is also black, but it has no smell, and I usually employ it instead of ichthyol, which is too disagreeable to have a large place in my practice. Remedies which do not stain or smell, and can be used without interfering with the patient's employment, should always have the preference.

Picric acid in the form of a saturated watery solution (about one per cent. solution) has been recommended by MacLennan, Gaucher, and others in acute discharging eczema. The solution is painted on or dabbed on with absorbent wool. It is said that itching and smarting immediately abate, and that it is not painful. The last statement is not correct; it often produces considerable smarting for ten to twenty minutes, and is very uncertain in its action, sometimes aggravating the inflammation instead of abating it. It should therefore be used tentatively over a small area, in case it should be unsuitable. I have chiefly used it in subacute cases, sometimes with success, but the proportion of failures was too great for its continuance in my practice. Some authors recommend that after painting the solution should be applied with wool soaked in it, and a dry pad of wool over that, but oiled silk must not be used, as maceration of the skin ensues.

Having given a general account of different methods of treatment, it now only remains to state the modifications required, according to the position of the eruption.

E. of the Head. In a child cut the hair short and soften the

crusts with strips of flannel dipped in oil, and fasten them on with a calico cap for four or six hours; the crusts may then be removed by means of a comb or the fingers, or where they are much matted, by cutting the hair under them. If it is a case of E. pustulosum, an iodoform or iodol ointment, gr. 5 to ℥j of vaselin or lard, spread on strips of lint and kept on with the cap as before, will be the best, renewing night and morning, after wiping off the old ointment. In a week or so the pustular element will be removed, and the eruption will be dry, or at most serous; oleate of zinc, or lead, or boric acid ʒss to ℥j may then be substituted for the iodoform, with later perhaps a few grains of ammoniated mercury added. In E. vesiculosum these ointments may be used at once. Boric acid and starch poultices are used by Jamieson for preliminary cleansing purposes, and these are safe and efficient, but linseed and bread poultices should be absolutely tabooed, as they too often serve as nutrient media for pus and other cocci.

In adults the ointment may be applied with the finger as directly as possible to the scalp, and when the acuteness of the inflammation has subsided the mixed ammoniated and yellow oxid of mercury may be used of various strengths, from gr. 10 to ʒss of each, according to the degree of inflammation. Where there is great irritation a few minims of oil of cade to the ℥j is a good addition; the hairs should be extracted where there is pustular inflammation round them.

In some adult cases of pustular eczema capitis a lotion of glycerini plumbi subacetatis ℥ss, liq. carbonis detergentis ʒfss, aq. rosæ ad ℥vj acts admirably.

E. of the Ears. The redness and swelling are often very great. Calamin liniment freely applied and painted inside the meatus several times a day generally gives relief; lactate of lead lotion, or glycerin of the subacetate of lead, one to ten, are also good applications, always with protection against temperature changes. Acidi borici ʒj, pulv. amyli, zinci oxidi āā ℥ss is a good dusting powder.

E. of the Face. In infants lead, zinc, or boric acid ointments, or Lassar's paste, are usually preferable, and in most cases the oleate of zinc is preferable to the oxid. Here again, the ointment should be applied continuously under a mask, and here, as in all infantile eczema, the great trouble is to prevent scratch-

ing, which often frustrates all curative measures. Whenever it appears irritable, the rag should be raised and almond oil painted on, and the rag replaced. The hands at night must be restrained, and in very obstinate cases it may be necessary to bandage them to the sides of the body, like a mummy. They seldom resent the confinement after the first few hours. In some cases the zinc, starch, and boric acid powder already mentioned suits well when dusted thickly on.

In adults, unless the discharge is very profuse, calamin lotion agrees well and is very convenient; if it is too drying, calamin liniment may be substituted, or some other greasy, soothing astringent. The glycerin of subacetate of lead is cleanly and comfortable, but in some cases the glycerin disagrees. When the acute inflammation has subsided, the addition of some liquor carbonis detergens is often desirable, beginning with ♏v to the ℥j and increasing as may be found necessary.

E. of the Eyelids, or *Blepharitis,* is common in strumous children. The crusts must be softened with oil, picked off, the hairs extracted, and ung. hyd. nitratis, 1 to 8, smeared along the edges. In obstinate cases McCall Anderson's plan of painting liq. potassæ gr. 10 to ℥j carefully along the edges, after protruding and everting them between the thumb and finger, is valuable. The action of the alkali may be restrained in a few seconds with weak acetic acid and water, and the process repeated every few days, with the dilute nitrate of mercury ointment in the intervals. Suitable constitutional treatment should always be employed. Where the mercurial ointment cannot be borne, boric acid ointment ℥ss to ℥j may be used.

E. of the Lips is troublesome, and leads to fissuring, on account of the constant mobility. The frequent, often unconscious, licking of the dry lips is an aggravation.

The frequent application of soothing remedies, *e. g.*, liq. plumbi subacet. ♏xv to ℥j of white vaselin or lard, may be tried, or plumbi carb. gr. 15, cremor. frigid. ℥j should be frequently applied, and always after licking the lips.

If these fail, Hebra's carbolic lotion referred to may be painted on, or nitrate of silver in nitrous ether may be resorted to.

E. of the Beard. When the hairy part of the face is affected

shaving should be insisted on as soon as the acute stage is over, if not before; it is not so painful as might be anticipated, and if the patient is once prevailed upon to do it, there will be no further difficulty in keeping it shaved. Where there are pustules the hair should be extracted; when it is acute, soothing remedies must be employed as continuously as possible; afterwards hyd. oleate one or two per cent., weak sulphur ointment gr. 5 to gr. 20 to ℥j, or ung. hyd. nitrat. dilut., are the most suitable; in short, the treatment for sycosis is applicable here.

In very old-standing cases multiple linear scarification of the whole surface is a very valuable preliminary, the surface being subsequently dressed with iodoform gr. 5 to gr. 10 to ung. acidi borici ℥j: the scarification may have to be repeated. Cases of many years' duration may be cured by this method.

E. of the Arms offers no special difficulty; soothing astringents and antiseptics in pastes or ointments can always be continuously applied with a bandage when acute, while in the chronic scaly patches, nitrate of silver, liq. carbonis detergens and lead, etc., or oil of cade, may be painted on. The papular forms are very common here, and bear tar well, but when there are only fresh papules breaking out continually, calamin lotion is often sufficient.

E. of the Palms is always troublesome, on account of the constant movement, and also because the natural thickness of the epidermis is increased by disease. In all cases it is essential to remove the thick epidermis, as otherwise medicaments are useless. This may be done by mechanical or chemical means. The hard skin may be rubbed down with pumice stone or fine sandpaper. Unna's plan of applying salicylic acid plaster, renewing every two or three days, is an excellent one; the whole thickened epidermis may be peeled off in this way. Another plan I have found work well is to apply a pancreatic emulsion constantly on lint; this disintegrates the cuticle, and much facilitates removal. Morris suggested papain with the same object, but it is not so powerful. Pepsin is also not so effectual, and is less suitable, as it requires an acid medium to act in, while the others act in an alkaline fluid.

After the epidermis is removed salicylic acid gr. 10 to ℥j to ℥j is one of the best remedies; here the gelatin zinc paste is very useful as a base, as it can be kept on without trouble, and

only requires renewing once in twenty-four hours. Painting with Stockholm tar and then soaking it off with olive oil is often most valuable. Thiol and ichthyol are also said to have a powerful effect in diminishing thickening, and there is no harm in prescribing them, preferably along with salicylic acid, but I have not had convincing proof of their effect in this direction, though I have often tried them. When the inflammation is at all acute, soothing applications are best. When the fingers are affected each one should be dressed separately. Mercurial ointments, the oleate especially, are useful for E. palmæ, but they must not be applied continuously.

E. of the Nails is always a very slow affair, as it is so difficult to get at the matrix; wrapping the ends up in ung. picis continually is often very useful, but disagreeable; less objectionable is salicylic acid ointment ʒss to ʒj. It may be pushed under the nail fold. It has to be used intermittently, as the skin gets sore. As a rule, patients can only give up one or two fingers at a time to treatment. Shoemaker recommends oleate of tin ʒj to the ℥j. A weaker preparation gives a luster to the nail, according to him.

E. of the Genitals is one of the most distressing varieties for the patient, and the most troublesome for the attendant. On the scrotum, when acute, ointments seldom succeed except sometimes a weak boric acid ointment. Calamin liniment, or lotion, or the lactate of lead often answers well. Jackson is a strong advocate for sheet-rubber envelopes. The itching, which is quite maddening sometimes, may be relieved by painting on the nitrate of silver solution, gr. 5 to 15 to the ℥j of nitrous ether, or by Bulkley's plan of applying a handkerchief dipped in water as hot as can be borne for two or three minutes, not more, then drying, and putting on the local application selected, at once. This I have found very successful sometimes, and it has secured a night's rest; but better than all is the application of a mustard leaf over the lumbar enlargement; this relieves the intense pruritus more completely and for a longer period than anything else.

When on the penis the lead and liq. carbonis detergens lotion, applied two or three times a day, is a good remedy in many cases.

E. of the Vulva is not quite so troublesome as that of the

scrotum, though bad enough. Calamin liniment or lactate of lead is useful here also, but the nitrate of silver solution, not more than gr. 5 to the ʒj of nitrous ether at first, is probably the best application; as a rule, the smarting only lasts a few minutes; of course, the possibility of its being due to diabetes mellitus must be borne in mind, and if glycosuria is present, constitutional treatment in accordance with it must be adopted. Uterine or ovarian irritation, if present, should also be removed.

E. of the Legs. In all cases of eczema below the knee rest in a horizontal position is an important adjuvant, especially if there are varicose veins; bandaging carefully from the foot upwards is the best alternative to rest, but I do not care for Martin's rubber bandages, except when there is an elephantiasis condition or tendency to papillary hypertrophy. Boric acid ointment ʒss to ʒj is one of the most generally applicable, unless the discharge is very profuse, when a lead lotion of some kind is better. I use chiefly the glycerin of the subacetate, 1 to 8, but sometimes the lactate is preferable.

For chronic patches on the knee or popliteal space the tar and olive oil or Hebra's soap treatment are the best. The gelatin zinc paste is a very convenient application for these parts if the surface is not too moist.

E. Circumscriptum (?) Parasiticum. I venture to give this name to the form of eruption which looks like a dry eczema, but its border is more sharply defined than is usual in E. squamosum. It occurs chiefly on the legs, especially below the knee, but I have seen it * on the arms. It is made up of minute papules, which aggregate into a pretty uniform, moderately red, scaly patch, with sharply defined borders, and perhaps outlying papules; it remains for years, if untreated, slowly extending or forming fresh patches, and is not symmetrical; there is moderate itching. I have not succeeded in demonstrating a parasite, but a weak parasiticide ointment cures it, such as sulphur. sublim. gr. 20, acid. carbolic. ♏xv, adip. benz. ʒj.

Hans Hebra † has described a parasitic eczematous eruption,

*M., æt. fifteen, private note book, vol. i. p. 165.

† *Wien. med. Blätter*, 39 and 40, 1881. Abs. *Ann. de Derm. et de Syph.*, 1883, p. 142.

but it is accompanied with weeping and crusts; and is very chronic, if untreated. It is situated in the flexures of the elbows and knees, and on the neck. He treats it with Wilkinson's sulphur ointment, or with first a ten per cent. pyrogallic acid ointment, and afterwards a five per cent. alcoholic solution of salicylic acid.

Epidemic Eczema. See Epidemic Exfoliative Dermatitis.

DERMATITIS REPENS.

Definition.—A spreading dermatitis, usually following injuries, and probably neuritic, commencing almost exclusively in the upper extremities.

Since I first described this disease in 1888 * from three cases, it has become recognized by other observers, and some additional facts have been gained which throw a little more light on its real nature. Dr. Garden of Aberdeen, Mr. Charlton of Salisbury, and Dr. Coward of Almondbury, have sent me photographs or drawings of typical cases, and I have now seen over a dozen cases, all of them remarkably alike, except as to their extent. I have also seen three cases of a dry form.

Nepveu † read a case at the French Congress of Surgery in 1886 which probably belongs to this category. The patient was a woman, in whom a vesicular eruption, commencing in a superficial wound of the thumb, spread over the whole body. Bacteria were found in the vesicles, and the disease was checked by an iodoform dressing.

In all the cases in which inquiry has been made, an injury, often a trivial one, has been the exciting cause. Vesicles or a bulla have appeared at the site of the injury, and these have ruptured and the elevated epidermis been thrown off, leaving a bright red surface, oozing a clear or slightly turbid fluid. The border of the denuded area is bounded by a collar of the epidermis, which is raised up by subjacent fluid, clear or turbid, and is sodden and irregular. Sometimes extension takes place

* In the first edition of this work, with an account of the three cases. I also read a paper on it at the Derm. Congress at Vienna in 1893. Stowers' case is now referred to acrodermatitis perstans.

† Paris correspondence, *Brit. Med. Jour.*, December 11, 1886.

by the continued detachment of the epidermis by further exudation, or there may be fresh vesicles or small bullæ just beyond the border, which break down and add a newly denuded area to the original adjacent one. Although new adjacent foci may thus be formed, the disease does not generalize by the formation of new distant foci. Cases may last for weeks, months, or even years.

The extent of the disease varies greatly; in the majority it does not extend beyond the hand first attacked; but my first case extended to the elbow, my second began on the wrist, and extended down to the hand and up the arm, across the back of the neck, and down the left arm to the elbow, the old parts healing while there was fresh extension. It lasted nearly a year. Other cases have been more amenable than these, but they have always given a great deal of trouble to cure.

Dry Form.—In three cases a very similar condition was present, with slow peripheral extension and undermined epidermic border, but the inflamed part was dry throughout. In two there was a history of previous syphilis, and in the third it could not be excluded. In all of them a trivial injury was the exciting factor, and their general course was, like the others, quite uninfluenced by internal specific treatment. One of them was particularly obstinate, and lasted nearly two years, in spite of specific treatment, local and general, and of varied local treatment, such as is ultimately successful in non-specific cases.

Acrodermatitis Perstans. Hallopeau * has described, under the French equivalent of the above title, a condition closely allied, in its symptomatology at all events, to dermatitis repens. Stowers † and Frèche ‡ have each described a case, the sequel of Frèche's case being Case IV. of Hallopeau; and Audry § has published three cases.

* Hallopeau, "Les Acrodermites Continues," *Revue Générale de Clinique et de Thérapeutique*, February 12, 1898, and p. 838 of Hallopeau and Leredde.

† Stowers, "Notes on a Case of Dermatitis Repens," *Brit. Jour. Derm.*, vol. viii., 1898, p. 1. Colored plate.

‡ Frèche, "Eruption Trophonévrotique des Extrémités rappelant la Dermatitis Repens," *Annales. de Derm. et de Syph*, vol. viii., 1897, p. 491.

§ Audry, "Lés Phlycténoses Récidivantes des Extrémités," *Annales de Derm. et de Syph.*, vol. ii., 1901, p. 913, republishes all previous cases,

Hallopeau distinguishes a vesicular, bullous, and a purulent type, and a mixed form (Audry's case). The disease, like dermatitis repens, begins on one finger or thumb, and may be limited to it for a long time; then others are successively involved, and it may spread to the palm, less often to the back, but the whole hand is rarely involved. The vesicular form has not so far attacked the toes, while the pustular has done so. In both the nails are liable to be affected, by thickening, furrowing, pitting, and discoloration, in some cases followed by complete loss. The oral mucous membrane and tongue have been attacked in two cases. The initial lesions are vesicles or pustular phlyctenulæ on a reddened base, which rupture after a time and leave excoriations, and some have apparently started from whitlows, and in some an injury has been the immediate antecedent. The disease is usually confined to the extremities, chiefly the hands, but secondary eruptions may arise in the pustular form, by the development of fresh foci and not by continuity, on any part or even over the whole body, and in one case (Frèche-Hallopeau) a fatal impetigo herpetiformis developed. The secondary eruption may be erythematous and desquamating, like pityriasis rubra, instead of pustular. These secondary eruptions are symmetrical, and affect especially the neck, arms, elbows, wrists, scrotum, and knees, ankles and lower part of the legs, but no part, including the scalp, is exempt. The skin lesions on the extremities exactly correspond in the vesicular forms with dermatitis repens, but have less tendency to spread beyond the hand than the latter. Many cases of dermatitis repens have never spread beyond the hand, and Hallopeau is not justified in claiming such cases as his acrodermatitis on this point alone. More valid grounds are the tendency of acrodermatitis to be kept up indefinitely by recurrences in the same place, while dermatitis repens is kept up by continuous extension, the original place healing, though very slowly. Acrodermatitis, when secondarily attacking parts

and adds two more, ten in all. In vol. viii., 1897, p. 141, he proposed a classification of diseases attacking the extremities—"acrodermites." But classifications on such small bases are too like an inverted cone to be of practical value.

M. Carle reports a case of five years' persistence apparently cured by electro-cautery. *Loc. cit.*, vol. iii., 1902, p. 130.

other than the extremities, does so by the development of fresh foci, and large areas are produced by the coalescence of several such foci. It is also more persistent, and may be fatal ultimately. On the other hand, they resemble each other by both attacking and being often limited to the extremities; in the similarity of the skin lesion; by the slow evolution; by the frequency of a traumatism being the starting-point; and by their rebelliousness to treatment, though dermatitis repens does eventually get well. Moreover, when healing has taken place there is not the same tendency to recur in the same place in dermatitis repens.

Pathogeny.—The cases tend to show that the dermatitis starts as a result of a peripheral neuritis, generally set up by an injury often quite trivial; and since antiseptics are generally eventually successful, it is probable that secondary parasitic invasion tends to produce extension of the disease, a view with which Audry agrees; but Hallopeau regards this and acrodermatitis perstans as entirely of microbic origin. The staphylococcus albus has been repeatedly found in several of his cases.

Diagnosis.—The distinctions between dermatitis repens and acrodermatitis perstans have been sufficiently drawn. The only other disease for which dermatitis repens may be mistaken is eczema. From this it differs in its purely local origin; its unilateral limitation, at all events for a long time; its absence of tendency to form new foci, except close to the main seat of disease; in the sharply defined border with undermined edge of sodden epidermis; the complete denudation of the epidermis on the part over which it has traveled; and in the absence of marked itching and burning. Iodoform dermatitis may somewhat resemble it, but the distinctions are much the same as from eczema, and there would generally be evidence of contact with the drug.

Prognosis.—All the cases have got well ultimately, but some have been very rebellious to treatment. With regard to acrodermatitis perstans the prognosis is not so good. Constant recurrences keep the disease up for years, crippling the patient, and a fatal result has ensued in the Frèche-Hallopeau case, in which impetigo herpetiformis supervened. Stowers' case lasted forty-five years, when the patient died of abdominal cancer. All the A. perstans cases have been of long duration.

Treatment.—The usual soothing applications for acute eczema are nearly always useless in dermatitis repens, except the lactate of lead lotion, which has been successful in arresting the disease in some cases; but the most efficacious treatment in my experience is to cut away the undermined epidermis, and paint on once a day a ten per cent. solution of permanganate of potash and let it dry, repeating it daily for a week, when a black crust is formed, which can be detached in a few days. This is Beissel's treatment for eczema, and requires to be repeated to various parts where the disease is not killed.

A one per cent. solution of nitrate of silver in spirit of nitrous ether was thoroughly tried in my first case without success, while Hallopeau found it in a 1 in 8 solution one of the best remedies for acrodermatitis perstans. In the purulent form he thought the fluid called laurenol was better still; it is a medley of sulphate of copper, chlorid of zinc, alum, chlorid of potash, chlorid of sodium, picric acid, boric acid, and hydrochloric acid. A three per cent. solution was applied on compresses; under this the suppuration disappeared for a time, but usually recurred; but once a permanent cure was effected.

In some cases of dermatitis repens rubbing in iodoform has succeeded in arresting the disease.

In the dry form rubbing on unguentum hydrargyri has a good effect for a time, but in the obstinate case before mentioned the treatment ultimately successful was to apply Unna's salicylic and creasote plaster to the edge, until the scaly collar could be softened and removed. Then a compress of 1 in 4000 perchlorid was applied till the part was sore, and then boric acid ointment put on to heal it. By these means perseveringly followed up the border was ultimately healed up.

DISEASES DUE TO PUS COCCI.

Modern research has shown that pyogenic organisms play an important part in the production of numerous inflammatory diseases of the skin, for the most part with pustular lesions.

The pus cocci include not only the familiar staphylococci, but the streptococci; and most eruptions with pustular lesions are caused by one or other of these genera, and it is the eruptions produced by them which are now to be considered.

The clinical variation is doubtless, in most cases, the result of the anatomical difference in the path of introduction. In impetigo contagiosa, the cocci gain entrance through the epidermis, abraded through scratching or otherwise; the inflammation is limited to the papillary layer, and on the destruction of the *materies morbi* the lesion heals readily without scar. In boils and carbuncles the mode of entrance is by the hair follicles and sebaceous gland orifices, but in carbuncle the cocci penetrate below the cutis into the planes of connective tissue, which accounts for its frequent disastrous extension.

Sweat boils have hitherto not been shown to be due to pus cocci. The opportunities for the investigation are fewer, and attempts to discover the cause have been hitherto negative, so at present it can only be inferred by analogy. In folliculitis the cocci are limited to the hair follicle and its immediate neighborhood.

There are also other organisms which sometimes produce pustular lesions without the intervention of pus cocci, and must therefore be considered as pyogenic. Such are the Trichophyton megalosporon, ectothrix and endothrix, the former most frequently; the acne bacillus, blastomyces, and the tubercle bacillus. The diseases produced by them are described in their respective sections.

Staphylococcus aureus, albus, citreus.

- Boils.
- Carbuncles.
- Coccogenic Sycosis.
- Lupoid Sycosis.
- Impetigo of Bockhart, and secondarily in other forms.
- Quinquaud's "Folliculitis Decalvans."
- Dermatitis Papularis Capillitii, and probably other forms of pustular folliculitis.
- Pemiphgus Neonatorum.
- Pemphigus (Contagious).
- Cutaneous Abscesses.
- Superficial Whitlows.
- Erysipelas.*
- Granuloma Pyrogenicum, and other fungating papillary growths.
- Acne Varioloformis, seu Necrotica.

* While erysipelas in man is usually produced by streptococci, Jordan has shown that it may also be produced by staphylococci, and in rabbits even by pneumococci and bacterium coli commune.

The accompanying tables show the respective *rôles* of the genera of pus cocci according to the most modern views; but, as will be shown, when considering the pathology of each affection, absolute proof that they are really the pathogenic organism is wanting in some of the diseases.

Secondary staphylococcal invasion occurs in impetigo contagiosa, if Sabouraud's views are correct, in pustular eczema, and various forms of pustular dermatitis.

Streptococcus pyogenes *	Impetigo Contagiosa, and its varieties, including Ecthyma, but excepting Bockhart's.
" of Fehleisen	Erysipelas.
	Erysipeloid.
	Superficial Whitlows.*

IMPETIGO.

Deriv.—Impetere, to attack.

This term was used by the older writers for various forms of pustular dermatitis, chiefly eczematous, the formation of pus constituting, in their view, a special disease. Willan and Bateman described five varieties: I. figurata, sparsa, scabida, erysipelatoides and rodens; the first four were eczematous, or impetigo contagiosa, the last was probably tertiary syphilitic ulceration, or sometimes rodent ulcer. Other obsolete varieties by later authors need not even be mentioned, as all these terms are now discarded; there remains only the impetigo contagiosa of Tilbury Fox and that of Bockhart.

The term impetigo ‡ should not be employed without its explanatory affix, as by itself it conveys no definite meaning.

* These two are said by some authors to be identical; by others to be different organisms.

† Gilchrist found both streptococci and staphylococci.

‡ Duhring has described under "Impetigo" what he considers a separate affection, but after long observation I am unable to separate it from I. contagiosa. It is said to be pustular from the first, more deep-seated, and therefore has a thicker and more rounded roof to the lesion, remains discrete, and is not contagious; to the last attribute I strongly demur. Its treatment is the same as that for I. contagiosa. It corresponds in some respects to Bockhart's impetigo, but the latter is always follicular.

IMPETIGO CONTAGIOSA.*

Synonym.—Porrigo contagiosa.

Definition.—Discrete vesicles or pustules, due to inoculation with contagious pus.

This is an important eruption, on account of its great frequency and liability to be mistaken for eczema. It was described independently by the late Mr. Startin and Dr. Tilbury Fox, the latter laying stress upon one phase of it, in which it occurs pseudo-epidemically, chiefly in the children of the poor. This form is one of the conditions reported from time to time as "epidemic pemphigus."

Symptoms.—In the common run of cases primarily, the eruption is a flat vesicle or "watery head," from a pea to a finger nail in size, which is soon converted into a flat, irregularly outlined pustule. The contents dry up into a yellow at first, and later into a greenish scab, completely covering the excoriated surface, and there being no red areola, the scab has the appearance of being "stuck on," as Fox expressed it.

The position of the lesions is usually due to the implantation of the pyogenic organisms by the finger nails in the act of scratching; and while the most common positions are round the mouth, chin, nostrils, and occipital region, they may occur in any part accessible to the finger nails. Chiefly from friction, fresh lesions arise near the original ones, and they may coalesce into small or large patches, and look like a crusted eczema, but discrete isolated lesions are almost invariably to be found in the neighborhood.

A few isolated pustules are often found on the hands and other exposed parts, and superficial whitlows may be present at the finger-ends. In the occiput pediculi are the irritants which lead to scratching, and the pus dries into greenish-black scabs, matting the hair together, and producing so much irritation in the neighboring glands that they enlarge, inflame, and sometimes even suppurate.

Variations.—It must be remembered that there are all grades of severity and extent of the eruption, which modify its ap-

*Author's Atlas, Plates XII., XIII., and XIV., illustrate the ordinary, bullous, and gyrate forms of impetigo contagiosa and of ecthyma.

pearance considerably. Thus, there may be a few discrete lesions only, or they may be combined with extensive patches, or the eruption may spread widely and rapidly over the body, and then is usually vesicular in the main.

The lesions also vary much in size and contents, they may be from a hemp seed to a finger nail, and while usually flattish in elevation, occasionally form large projecting bullæ, either primarily or from coalescence. The rule is for them to begin as vesicles, and become vesiculo-pustular and pustular at a later period, but they may be vesiculo-pustular or pustular from the first, without being situated at a hair follicle, the latter especially in cachectic children.

On the other hand, I have seen the eruption in adults as red raised irregular papules, or patches one-third of an inch or more across, extremely irritable, and scratched into an excoriation at the top, but none of them distinctly vesicular or pustular; bullous and pustular lesions may, however, occur in adults.

It is also modified by position; face lesions seldom have an areola, but when it occurs on the limbs, it is very liable to be rubbed, then the pustules get ruptured, covered with a flat, irregular scab, and surrounded by a more or less prominent areola.* Lesions of this kind used to be considered to be of a different nature, and were called ecthyma, but their association with the more typical aspect of the disease on the face is too frequent for there to be any doubt that they are the same eruption altered by friction, to which it is more exposed on the limbs than it is on the face.

The epidemic form is ushered in by transitory febrile symptoms, and comes out in crops of vesicles for about a week; it then dries up and runs its course in a fortnight. No line can, however, be drawn between these cases and the far more common condition in which there are no febrile symptoms, while the eruption is more limited, and does not, as a whole, run a definite course. It is almost certain that, in these rapidly developing generalized forms, the pus cocci get into the circulation, and thus spread the eruption all over the body, and their toxins, when they are numerous, produce the febrile symptoms.

*Sabouraud states that the impetigo contagiosa of T. Fox is always primarily vesicular, but this is only true as a general statement, to which there are many exceptions.

There is little doubt that most, if not all, of the localized epidemics of what are commonly reported as pemphigus contagiosus are really the impetigo contagiosa of the epidemic form of Tilbury Fox.

Impetigo contagiosa bullosa in the sporadic form only differs from the ordinary type in the lesions being larger, circular * flat bullæ, with narrow areola in some cases; the bullæ are more convex, and closely resemble ordinary pemphigus in form, but do not run the course of that disease.

Impetigo Contagiosa Gyrata. In July, 1894, † I met with a gyrate form for the first time. In that and the following year other cases, but less marked, appeared in the practice of others as well as in my own, but they have since ceased to occur except with very slight development. Apparently similar cases have, however, been reported from America ‡ and India under other names. The only explanation I can suggest is that the variation developed in the great heat of the summer of 1893, and has gradually disappeared, and it is now again only to be found in hot climates.

In this form the initial lesions vary from a hemp seed to half an inch in diameter, and form small flaccid bullæ with seropurulent contents. As they enlarge peripherally they become ruptured with a red areola inclosing a border raised up by fluid, and within that is a thin, flaky crust of a greenish hue, which forms another circle with a ragged inner edge, while the central part, in those sufficiently large, heals completely.

Impetigo of Bockhart is a pustular folliculitis, but is described here for convenience of comparison. This form, according to Sabouraud, differs from that of Tilbury Fox in being always primarily pustular, situated at a hair follicle, and due to a different organism, viz., staphylococcus aureus and albus. It

* This form in flat bullæ is well depicted in Tilbury Fox's Atlas, Plate XXIV.

† I read a paper on "Impetigo Contagiosa Gyrata" in *Clin. Soc. Trans.*, vol. xxix., 1896, with colored plate. The case is also illustrated in Plate XIV. of my Atlas.

‡ "On Impetigo Contagiosa Annulata," Schamburg, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xiv., 1896, p. 169, he refers to Plate VII. of Rayer's Atlas, but it is questionable it if was the same disease.

begins as round pustules with a long or coarse hair in the center, and its especial site is on the hairy scalp at the vertex or parietal region, and the pustules vary from minute pustules to the tip of the finger in size. Its onset is sudden as a crop of follicular pustules, and it is accompanied, or even preceded, by glandular enlargement of the neck. It lasts some days, reaching its acme in two weeks, and subsides in three weeks with falling off of the crusts. The pustules are seldom ruptured by scratching, and many dry up without breaking. Sometimes deep folliculitis ensues with true furuncles or even abscesses.

Successive crops of pustules and relapses are frequent. Other regions less frequently attacked are the neck, face, back, buttocks, and thighs, and it may start in those places. It is the precursor of all furuncular eruptions and frequently complicates the impetigo of Tilbury Fox, sometimes in the form of miliary pustules with a hair in the center of each.

It is related to acne capillaris of adults, acne necrotica, furunculosis, suppurative acne, iodid acne, traumatic and pustular dermatitis.

Such are the description and views of Sabouraud, but with much of this I cannot agree. While pustular folliculitis as described is found very often on the occipito-vertex regions of the scalp with enlarged cervical glands, the lesions are almost entirely due to the scratching induced by the presence of pediculi capitis as previously described, and the glandular enlargement does not precede, but follows, the pustular development. I strongly doubt whether these scalp lesions are really due to a different disease and organism from that described by Tilbury Fox, the pustular character being largely due to position, which is more favorable to the development of pus-organisms than the skin of the face.

Sabouraud accounts for the different lesions being so constantly associated by asserting that Bockhart's impetigo frequently complicates that of Tilbury Fox. The simpler explanation, that they are only variants of the same disease, is not yet conclusively disposed of, as will be seen under the Pathology section.

Etiology.—Out of four hundred cases seen by the late Mr. Startin, three-fourths were children under seven years of age, and only twenty-seven were adults. It is chiefly seen among

the poor, and is always due to the inoculation of contagious pus, independently of its source. Scratching easily leads to purulent lesions in children; hence pediculi capitis are a very common cause of I. contagiosa. Scabies and urticaria occurring mainly on the trunk and limbs, the lesions generally assume the so-called ecthymatous character. In a medical student I traced an acute, general outbreak, mainly vesicular, to the irritation of the harvest bug. Of course, it may also be propagated from one person to another. Much has been said of its frequently following on vaccination, but this is only another instance of pus inoculation; the vaccine lesion is often very itchy in its purulent stage, the child scratches it, and transfers the pus to other parts of the body.

A few years ago there was much discussion on what was called "football impetigo," or, as the schoolboys called it,

Fig. 15.—Micrococci of Impetigo Contagiosa. ×550.

"scrum-pox." It is ordinary impetigo contagiosa, propagated in playing the Rugby game from one boy to another, and also from their wearing each other's playing clothes. Cultivations by Galloway yielded apparently pure cultures of staphylococcus aureus.

The contagium probably flourishes more easily in the cachectic, and the child with a severe attack is generally pale and ill-nourished. This may, however, sometimes be the consequence of absorbing a toxin from the lesions, sufficient, when they are numerous, to damage the general health, and even produce febrile symptoms.

Pathology.—The lesions, whether vesicular or pustular, are due to the inoculation of pus cocci into the superficial layers of the skin, hence no scars are left when the diseased area heals.

So far all are agreed, but of late years it has been asserted that the impetigo contagiosa of Tilbury Fox is always primarily vesicular, and due, some say, to the streptococcus, while others consider it to be a specific coccus differing from both staphylococcus aureus and streptococcus pyogenes of Fehleisen;

while the primarily pustular follicular impetigo, as described by Bockhart, is a separate disease, and is due to the staphylococcus pyogenes aureus.

Further, it is generally admitted that in the pustular stage of Fox's impetigo, staphylococci are also present in addition to the streptococci, but it is said as a secondary invasion.

There are also the possibilities, viz.: That, as has been proved for erysipelas, by Jordan, both streptococci and staphylococci may be capable of producing the lesions of impetigo contagiosa; and, secondly, that these streptococci and staphylococci are different states of the same organism.

A short history of the course of events will best show the present aspect of the question.

I was the first to describe organisms in the fluid of unruptured vesicles in 1881 * in the form of diplococci and short chains, but no cultures were then made. Later cultivations in solid media by various observers gave apparently pure cultures of staphylococcus, and three years later Bockhart also found them and considered them to be the streptococcus of Fehleisen, the erysipelas microbe, and in his inoculations he produced lymphangitis.

I found chains of micrococci in twos, or multiples of two, which were most abundant in the pustules, and were also present at the periphery of the epithelial cells, but not in the pus-cells as in Fig. 13. E. A. Barton, working in my laboratory, obtained pure cultures of staphylococcus pyogenes aureus from the fluid of unruptured vesicles. Inoculation on his own arm produced a vesicle, which soon healed. He was prevented from pursuing the subject, but Dubreuilh of Bordeaux and others independently came to the same conclusion.

Unna and Schwenter-Trachsler in 1899 made elaborate researches on Fox's impetigo, and also described a specific coccus differing from staphylococcus aureus, and in 1900 Sabouraud came to the conclusion that Fox's impetigo was due to the streptococcus of Fehleisen, and Bockhart's to the staphylococcus aureus.

Gilchrist of Baltimore found streptococcus pyogenes to be the agent. On the hand other, Charles White of Boston,* in 1899, well aware of these researches, still found only staphylococcus aureus as the pathogenetic organism, as also did Corlett. Kaufmann in 1899 found in unruptured vesicles the same chains and diplococci as I had done, but from his cul-

* *Lancet*, 1881, vol. i. p. 82. Fluid was withdrawn in a capillary tube from an unruptured vesicle and blown upon a cover glass, dried, and stained with methyl violet. The cocci were then readily observed with an object glass magnifying 550 diameters.

† White gave an excellent historical review in a brochure read before the Massachusetts Med. Soc., June 13, 1899, with references to date.

tures concluded that the chains were too short to be the true streptococci of Fehleisen; he considered the organism he isolated to be a specific coccus, and generally confirmed the view of. Unna and Schwenter-Trachsler. Matzenauer also isolated a coccus which he was not able to differentiate with certainty from staphylococcus aureus. Nabarro,* from an unruptured vesicle of a case of my own, obtained a pure culture of staphylococcus aureus both in bouillon and gelatin. From these differences of opinion it is obvious that further research is still necessary; but in order for observations to be of value, only fluid from unruptured vesicles must be used, and liquid media employed for cultures, as in solid media staphylococcus grows so much more vigorously than the streptococcus that the latter is overshadowed, and an apparently pure culture of staphylococcus aureus nearly always results. To continue to make observations on fluid taken from beneath crusts is so obviously open to error as to be unscientific and waste of time.

Diagnosis.—The discrete character of the lesions, the absence of redness round them, unless they are rubbed, and the inoculability of the fluid, are the characteristic features. *Pustular eczema* of the face most nearly resembles it, and when the lesions of I. contagiosa have coalesced into a patch the resemblance is very close; but discrete lesions are nearly always to be found in the neighborhood in I. contagiosa, and the surrounding inflammation of eczema will give the clew to the diagnosis. It must, however, be borne in mind that sometimes the pus of pustular eczema becomes inoculable, and the result is a mixed condition. Appropriate treatment for the I. contagiosa removes it quickly, leaving the eczema uncomplicated. The differences between the impetigo of Fox and Bockhart have been sufficiently indicated.

Prognosis.—Under favorable conditions the disease will run its course to complete cure in two or three weeks, but is often kept up for an indefinite period by auto-inoculation.

Treatment.—This is simple, and always effectual. Remove the crusts by soaking in olive oil until they can be detached by the nails or a paper-knife, or by cutting the hair beneath them; on the face, bathing with hot water is sufficient to enable the crusts to be picked off; then apply continuously an ointment of hydrarg. ammon. gr. 10, lard or simple ointment ℥j, and in a few days the sore will heal up completely, and leave only a transitory redness. Other remedies will also cure it, but the above

* Nabarro is the assistant teacher of pathology of University College, and has had large experience of bacteriological investigations.

obeys completely the motto "Cito, tuto et jucunde," and is only contra-indicated when the surface to be dealt with is very large, as in I. gyrata of a large part of the trunk. The surface may be sponged thoroughly once with 1 in 4000 corrosive sublimate, and then boric acid ointment spread thickly on lint or linen and closely applied.

Ecthyma. *Deriv.*—ἔκθυμα, a pustule.—This is still considered by some dermatologists to be a distinct disease. The only cases at all entitled to be so considered, in my opinion, are those cases of inoculated sores seen sometimes in butchers, farriers, cooks, etc., from decomposing animal fluids, resulting in irregularly outlined, flat pustules on a highly inflamed base, generally few in number and in the neighborhood of the primary inoculation; but even these are very likely produced by the same organism as the ordinary form, which is, I am convinced, only I. contagiosa of the limbs and trunk, in which a more or less red, raised, and even rather hard areola is developed by friction, scratching, or other irritation.

The lesions are invariably secondary either to the ordinary form of I. contagiosa, as seen on the face, or to some pruritic disease, such as prurigo, scabies, pediculosis, or other parasitic irritation, and in children also to urticaria. In short, whatever gives rise to scratching is liable to produce in predisposed subjects the discrete, flat, irregular scabbed pustules, with their surrounding areola, which characterize the so-called ecthyma, the lesions of which on the lower limbs sometimes attain to a large size, *e. g.*, an inch or more in diameter, with thick and almost rupioid scabs often deep-seated enough to leave scars.

In every case of this kind, therefore, it is not enough to give the eruption a name, but the source of irritation must be carefully inquired for. Sometimes this cannot be discovered, on account of the irritant being no longer in operation, the disease being kept up by auto-inoculation.

The pathogenetic organism is the same as that of impetigo contagiosa, according to Sabouraud, the streptococcus of Fehleisen.

The lesions can always be healed by the same treatment as that for I. contagiosa, but fresh ones may form if the source of irritation be not also removed. Since the eruption is most

easily excited in delicate children, in the destitute poor, the dirty and cachectic, good food and hygiene, cod-liver oil, and iron are often desirable adjuncts to the treatment, but not absolutely essential.

Pemphigus Neonatorum.—This is not really a separate disease, though it is usually so described, but is a bullous infantile variant of impetigo contagiosa.

The eruption begins in the first week or two of life, most frequently about the thighs, buttocks, and pubes, but may come out on other parts of the trunk and limbs and on the face, but, as a rule, the bullæ are in small numbers and their development is spread over several days. The bullæ rise abruptly from the surrounding skin without areola, and have pellucid contents, sero-pus or pus being exceptional, and it is only in the latter case that there is a narrow red areola. Bullæ have appeared on the mammæ of women who have suckled children thus affected.

If the child is placed in good hygienic conditions, and the bullæ and flexures are dusted with boric acid one part, zinc oxid, pulv. amyli, of each four parts, the bullæ present soon dry up and fresh ones cease to form, in the great majority of cases; but sometimes, especially in epidemics, the infants die, probably more from general septic infection, as in Emmett Holt's case,* than from the eruption. In Bloch's † epidemic of fifteen cases they all died, and a mixed infection of streptococcus pyogenes and staphylococcus was present. When the mother has had puerperal fever ‡ with bullous eruption, and the child also has pemphigus, it is very likely to die.

These cases have been called malignant, but there is probably no essential difference from the mild form. I have seen a hemorrhagic form, in which millet seed to pea-sized mulberry red to purple bullæ from blood-stained serum began four days after birth and continued to come out; they were all over the

* *N. Y. Med. Jour.*, February 5, 1895, p. 175.

† *Archiv. f. Kinderheilkunde*, xxviii., Bd. I. Abs. in *Brit. Jour. Derm.*, vol. xii., 1900, p. 304.

‡ Cases are recorded of this by Greer in *Brit. Med. Jour.*, June 6, 1894, p. 241. Both mother and child died; Staub of Posen, *Ann. de Derm.*, etc., vol. iii., 1892, p. 1200. In one case mother and child recovered; in two others the children died and the mothers recovered.

body, including the palms, soles, and mouth. The child died after five weeks. There were empyema infarcts in the spleen and small abscesses in the liver; no defect in the hygiene of the surroundings was noticed.

Marcuse * reported a similar case to the Berlin Dermatological Society. There was extensive denudation of the epidermis. A case in which the contents of the bullæ were bright yellow, supposed to be bile, but not tested, was reported by Goodwyn † in a child three days old; the eruption got well in a week.

Etiology.—It occurs sporadically in unhealthy dwellings, or where there are other children with impetigo contagiosa or similar sources of pus cocci contagion; there are also endemic outbreaks in certain localities and formerly in lying-in institutions.

In one instance which fell under my notice the child was one of many who were attacked in the same lying-in institution; the disease ran a short and favorable course.

Some of these local outbreaks have been limited to the practice of a certain midwife, and in one such outbreak Bohn ascribed it to the midwife putting the child into too hot a bath; but it is really of septic origin, and now that asepticism is practiced in all lying-in institutions in this country, outbreaks have ceased to occur. In several sporadic cases I have been able to prove the existence of defective drains in the house where the child was born. Pernet, in investigating some cases in my clinic, obtained a history of mammary abscesses in the mothers of two cases. In another, on visiting the house, he found three other children with impetigo contagiosa. Matzenauer ‡ relates the case of a mother with impetigo contagiosa who infected her infant with resulting pemphigus neonatorum, and conversely says that when the infantile bullous eruption is communicated to adults, impetigo contagiosa results. He also says that, histologically, the lesion in both is situated between the rete and the stratum corneum. Bacteriologically, in both he found on

* *Annales de Derm.*, vol. x. p. 90; the palms and soles were also affected.

† *Brit. Med. Jour.*, July 21, 1892.

‡ *Wiener klin. Wochensch.*, No. 47, November, 1900, p. 1077. On the question of identity of pemphigus neonatorum and impetigo contagiosa.

cultivation a coccus indistinguishable from staphylococcus aureus. Brosin and others have also found this organism. This point has been investigated repeatedly in cases from my clinic for many years, at first with solid and recently with fluid media, and a pure cultivation of staphylococcus aureus always resulted, while Whitfield obtained a pure cultivation of streptococcus from one case. This would show that both organisms may give rise to these lesions.

Richter considers that Ritter's dermatitis exfoliativa neonatorum is a sub-group of pemphigus neonatorum. When mixed infections occur, hemorrhagic bullæ, gangrene, febrile symptoms, and death may ensue. Possibly this is the same type as that described by Tilbury Fox.* Apparently healthy children are seized with severe constitutional symptoms, the skin is livid, the areola of the bulla is dark, the contents fetid, the ulceration is deep and unhealthy, its surface is dark, blackish, and exudes an ichorous matter, the edges being livid and shreddy, so that large circular depressed black gangrenous ulcers, acutely produced, are present. All parts may be affected and the infants die in ten or twelve days. From the context it would almost appear that Fox regarded it as a bad form of the disease described by Whitley Stokes under the name of pemphigus gangrænosus, which was probably varicella gangrænosa. See Dermatitis Gangrænosa Infantum.

Diagnosis.—Pemphigus neonatorum must not be confused with congenital syphilitic pemphigus. The latter also appears in the first week, but the lesions are pustular and attack the fingers, especially at the nail matrix, and there are other symptoms with pronounced cachexia, while in P. neonatorum the contents are clear, the lesions are large, the hands are seldom involved, and the child is often in perfect health. Effectual treatment has been mentioned already.

Outbreaks of **Epidemic Pemphigus**, or P. contagiosus, are from time to time reported. Some of them are the variety already described of P. neonatorum, others are examples of varicella bullosa or impetigo contagiosa bullosa, and it is still a disputed point whether there is a true pemphigus which may be contagious or epidemic. In my opinion they are all bullous forms of impetigo contagiosa.

* Third ed., p. 212.

These epidemics occur invariably in children. Thus Colrat * relates a case of pemphigus in an infant æt. eighteen months, and a fortnight after its admission four other children in the hospital for other ailments developed pemphigus, which ran a normal course. The bullæ were auto-inoculable, but the new one was smaller than the parent bulla. Micrococci like the figure 8 were found in the bullæ. He carefully excluded varicella bullosa as an alternative diagnosis, but they were probably impetigo contagiosa.

Dr. Blomfield of Sevenoaks wrote to me in December, 1891, informing me that there had been an epidemic in his neighborhood; ten to fifteen per cent. of the Board-school children had had it in the course of the year, whole families having been affected. The bullæ, up to the size of half a walnut, came out on the face, hands, and feet, dried up, and left impetiginous sores.

P. Manson † of Amoy has described a P. contagiosus, which, as it is peculiar to the tropics, might be called **P. contagiosus tropicus.** It should be compared with impetigo contagiosa gyrata, with which it appears to me to be identical. There is a diffuse or infantile and an axillary or adult form, though neither form is absolutely limited by age.

In the *diffuse* form vesicles or tense bullæ up to half an inch or more in diameter, with clear contents and without areola, appear in crops, with irregular distribution, in any part of the body, except the scalp, palms, and soles. The contents soon get turbid and the bulla flaccid; it then soon ruptures, but instead of at once healing up, it spreads at the border with undermined edge to an inch or more in diameter, forming circles with pink, perhaps slightly crusted center, or it may heal at one side and spread at the other, forming crusted crescents and suggesting a syphilid. It is especially liable to attack fat babies where the adjacent surfaces are in contact, and may then form a diffuse raw surface over a considerable area. The disease occurs chiefly in hot weather, but may be kept up by auto-infection for an indefinite time, and is readily communicated to others. Micrococci in groups, or in fours, twos, or singly,

* *Revue de Médecine*, December, 1884.

† *Transactions Hong Kong Medical Society*, vol. i. (1889), and reprint.

may be easily found by staining with an anilin dye. The Chinese did not seem so liable to it as Europeans.

In the *axillary* form the disease is limited to the non-hairy portions; one or two bullæ about one-eighth of an inch are first noticed, soon followed by fresh crops, which begin as minute red papules with or without a minute vesicle upon them; from these, small vesicles up to a buckshot develop, with a slight areola; then larger bullæ one-fourth to half an inch in diameter, which soon get turbid and rupture. The roof of the bulla may be left or rubbed off, but the lesion enlarges peripherally with its edge undermined to an inch or more; these different elements are mixed up in various proportions with others healed, or in process of healing. Manson thinks that the longer the duration the smaller the lesions. The treatment of both forms is simple and effectual. Twice a day the bullæ should be opened, emptied, and the parts thoroughly sponged with 1 in 1000 perchlorid of mercury solution, and then a boracic acid dusting powder applied, adjacent surfaces being carefully separated. White precipitate ointment is also effectual, but, especially in hot climates, less pleasant than the perchlorid. Careful consideration of this affection shows a remarkable resemblance to impetigo contagiosa gyrata and impetigo contagiosa. The high temperature may produce greater activity and account for minor differences. A few culture experiments would decide the point.

FURUNCULUS.

(Latin for boil, diminutive of *fur*, a thief.)

Synonyms.—Boil, furuncle; *Fr.*, Furoncle; *Ger.*, Furunkel, Blutgeschwür.

Definition.—An acute, circumscribed, phlegmonous inflammation round a skin-gland or follicle, resulting in its necrosis and suppuration.

Symptoms.—In this familiar affection the lesion may be single or multiple, in the latter case, coming in crops of from two to half a dozen or so, and no sooner have these got well than a fresh crop appears, and keeps up the process of what is

termed "furunculosis," for weeks, months, or years, if untreated. The boils do not form any definite group, but are isolated and scattered over the same, or widely separated regions.

Each boil begins as a painful induration in the skin, soon followed by a red spot or pit, which feels like a firm disc or shot-like body embedded in the corium. As it enlarges, it becomes raised above the surface, and gradually forms a convex swelling, with a tendency to point, and when fully developed is from a small split pea to half a plum in size, of a deep red, with or without a yellow center, while at the periphery the color is brighter, with red areola. The center softens, gives way, and from the opening, pus, and a piece of whitish, pultaceous, necrotic tissue called a "core," are discharged, though not infrequently this core may require a day or two longer for complete separation. Up to the time of evacuation there is a burning and throbbing pain, especially at night, quite out of proportion to the size of the boil, while the tenderness is so great as to be proverbial. All this is relieved at once by the discharge; the indurated, infiltrated tissue gradually softens, and is absorbed; the swelling subsides; the redness fades; the cavity fills up by granulation, and leaves more or less of a scar. Or the tumor may stop short of suppuration and resolve, constituting what is popularly known as a "blind boil." Constitutional disturbance is often present in proportion to the number and size of the boils, and the lymphatics and glands in the neighborhood are liable to sympathetic inflammation, going on sometimes even to suppuration.

Such is the history of furuncular inflammation in a sebaceous gland or hair follicle; and, while no part of the body is exempt, boils occur chiefly in the neck, face, forearms, buttocks, and legs.

According to Sabouraud, Bockart's impetigo is always the precursor of furunculosis, but this is too sweeping an assertion. Superficial pustules often precede, and are constant concomitants of crops of boils, but boils may develop without such antecedents.

Variation.—When the furunculus begins in the sweat coil, it constitutes what Verneuil described as hydrosadenitis phlegmonosa. Contrary to the view put forward in the second edition of this work, I now consider Verneuil's hydrosadenitis dif-

ferent to that of Pollitzer, which is described with acne agminata, which is the same as the acnitis of Barthélemy.

It is most frequent in the axillæ and fork, and all about the genito-anal region, near the nipples, the arms, and sometimes the face and neck, and may form wherever there are sweat glands, except on the soles. It is very like the ordinary form of boil, and, like it, there may be only one or two, or a crop. But at first it is subcutaneous, and only involves the skin as it nears the surface; it has no mattery head, and there is less induration and not much pain. It is ascribed to local irritation, but in my experience is connected with hyperidrosis. It is said to be more common in young people, but in two of my patients it came on at the climacteric. A lady * of sixty-five, whom I saw with Dr. Duncan Greig, had been subject for twenty years, dating from her climacteric, to suppurating lesions like boils, but without the induration of ordinary boils. They occurred symmetrically in the axillæ, the cleft of the anus and fork, but not in front, and to a slight extent in the bend of the elbow, at the root of the neck, and between the breasts. When one came on one side, before long another matched it on the other. In all the regions affected there was pigmentation of a lentiginous character, numerous sinuses, and considerable scarring. When I saw her she had only one recent, superficial, inflamed, and boggy tumor the size of a split pea, without induration, and a puncture gave exit to a little sanious pus. There were older soft swellings about the gluteal cleft, which also contained pus. The recent ones were tender, the older were not. She sweated profusely. There was no organic disease, but she took no exercise.

Etiology.—Ordinary boils, when single, are usually dependent on local injury, such as blows, friction, or pressure, *e. g.*, on the buttocks of oarsmen, in prolonged decubitus from any cause, etc. When in successive crops, they are often predisposed to, at least indirectly, by vitally depressing influences, sometimes of a septic character. Thus they occur in diabetes mellitus, after various specific fevers, especially variola, and in anemic, lithemic, uremic, and septicemic states. Of external causes, sewer-gas poisoning is the most potent. There is, however, strong reason to believe, as will be seen in discussing the

*Mrs. C. Private notes, E., p. 130.

pathology, that the above conditions merely offer a favorable opportunity for the development of the *materies morbi*. In not a few instances no defect of health can be detected, and there is a popular notion that too good living is responsible. The late Mr. Startin proved that they were auto-inoculable by scratching; that the pus was inoculable, *e. g.*, by a contaminated lancet, boils occurring at the seat of puncture; and that even prolonged contact, as by the occupation of the same bed, was sufficient for their conveyance.

Boils are a common complication in pruritic eruptions, such as eczema, prurigo, scabies, etc.

Pathology.—According to Kochmann, boils always begin round the hair follicles or the glands, but to these Verneuil has shown we must add the sweat glands, and it is now established that the inflammation is set up by microbes which gain entrance through these channels. According to Pasteur, whose observations have been confirmed by Loewenberg, Gilchrist,* and others, micrococci, which are now known to be chiefly, if not entirely, staphylococcus aureus, less frequently albus and citreus, can always be found in the contents of boils, and cultures from this are inoculable; but abscesses, not furuncles, are produced in animals. Guigeot accounts for this by the culture being introduced into the cellular tissue, instead of limiting the inoculation to the sweat ducts or follicular orifices. Loewenberg suggests that when once a boil has formed, the microbes may be transferred by auto-inoculation, and also that they may get into the circulation and that the crops of boils are kept up in this way; but if this is so, it is strange that the process should always be limited to the skin glands and follicles. In order that these organisms should flourish, it is admitted that the soil must be suitable, *e. g.*, that there should be a predisposition on the part of the patient, and this is found in the various debilitating influences mentioned under Etiology. The mechanism of the process is supposed by some to be that the vessels round the gland or follicle become blocked, producing its death, and inflammation is then set up round the necrosed tissue to get rid of it by suppuration. In aural

*Vol. xiv., *John Hopkins Hospital Reports*. Gilchrist examined twenty cases at all stages, and invariably found in pure culture staphylococcus aureus. They were present as diplococci in the pus.

furuncles * the organism most frequently found was staphylococcus albus, next to this S. aureus, and sometimes S. citreus. Kirchner of Wurzburg found S. albus only. These organisms have not yet been demonstrated in sweat boils.

Diagnosis.—The disease is so well known that the patient usually makes the diagnosis himself. The peculiarities of sweat boils have been already pointed out. The differences from a carbuncle are given with that disease.

Prognosis.—When occurring in crops the disease often gives much trouble, but perseverance in the method to be mentioned will be rewarded with success, though it is impossible to predict how long it will last. When dependent upon some serious general condition boils are often numerous, and aggravate the depression of health already present by the suffering and worry they occasion.

Treatment.—The first thing is to investigate the general condition of the patient, examine the urine both for albumin and sugar, and see if there is any defect in the health, habits, and surroundings which will account for the disease. Among these defects drainage and water supply are to be specially looked into, and in such cases, and in many others, change of air is often necessary. Unless the patient is gouty, tonics and nutritious diet are generally indicated, and ferruginous aperients (Mixtures, F. 16), are adapted to a large number of cases. Although the following internal remedies are to a certain extent useful, early local disinfection is the most efficient means of preventing constant recurrence, and if the circumstances of the patient allow of its being efficiently carried out, the boils will soon cease to form.

Supposing every attention has been paid to the general health, one or other of the following remedies has frequently been successful in my hands, viz.,* fresh yeast, half a wineglassful to be taken night and morning, or a less quantity more frequently. This is a popular and good remedy, though its *modus*

* Loewenberg, Internat. Med. Cong., 1887.

† Brocq, evidently unaware of its being so well known and used in England, rediscovered it in 1894 as a cure for boils and strongly advocates its use. He says that no publication between 1852 and 1894 occurs about it, whereas it is mentioned in the above terms in my first edition in 1888, and was then "as old as the hills."

operandi is not clear, unless we suppose that the yeast organism has the power of appropriating some pabulum necessary for the existence of the furuncle organism. Another remedy is that proposed by Ringer: one-tenth of a grain of sulphid of calcium every two or three hours, or one-fourth of a grain three or four times a day. As the sulphid speedily decomposes and becomes inert on exposure to the air, it should be prescribed in coated pilules. In cases due to sewer-gas poisoning large doses of quinine are requisite.

Locally.—Every boil is a fresh nidus for the cultivation, and a center for the subsequent dissemination, of the cocci which produce the lesion; if, therefore, the cocci in each boil are destroyed as soon as possible, the supply will thus be exhausted, and fresh boils soon cease to appear.

Both theory and practice forbid the time-honored plan of poulticing, and all hot wet dressings, unless antiseptic, are equally calculated to favor the development of further boils. After disinfecting the cavity, ten grains of iodoform to ʒj of boric acid ointment is a good dressing to a freely discharging boil, the cavity being daily syringed out with the carbolic solution. The treatment I adopt is to open each boil as soon as there is softening of the center, syringe it out with 1 in 40 carbolic acid, and put in the strong liquid or the crystals into the cavity.

The boils should not be opened in the hard stage, and when they are discharging they should not be squeezed. A small boil roughly handled is easily converted into a large one.

To abort them, an almost certain plan is to inject beneath the boil five drops of a 1 in 30 solution of carbolic acid.

Guigeot strongly recommends that spirit of camphor should be applied for a few minutes at a time, by means of a compress dipped in it three or four times a day; or tincture of iodin painted on freely three or four times a day, over and beyond the furuncle, until desquamation occurs. Loewenberg recommends a saturated solution of boric acid; this plan is a good one, and even when it does not stop it will limit the amount of suppuration. Other means to abort boils are caustics, nitrate of silver, nitrate of mercury, strong carbolic acid, and nitric acid painted on.

For sweat-gland boils painting with collodion is simple and

effectual for slight cases. Disinfection in the same way as ordinary boils is often necessary, and the hyperidrosis should be treated (see that disease). In the case of the lady with the sweat boils previously described I got Dr. Greig to open up the sinuses and thoroughly disinfect them, and every fresh boil as soon as possible, and in three months she was completely cured of the affection which had gone on for nine years.

CARBUNCULUS.

(Dimin. of *carbo*, a live coal.)

Synonyms.—Anthrax,* Carbuncle; *Fr.*, Anthrax; *Ger.*, Carbunkel, Brandschwär.

Definition.—An acute phlegmonous inflammation, circumscribed but more extensive than the furunculus, terminating in a more or less extensive sloughing of the tissues, and gangrene of the superjacent skin.

Symptoms.—The carbuncle is allied to, but is a much more serious affair than the boil, and when extensive, or in elderly or cachectic subjects, may have a fatal termination. Unlike the boil it is usually single, and favors the extensor aspects, especially the neck, shoulders, back, buttocks, and forearms.

A firm, flattish, inflammatory infiltration forms in the subcutaneous tissue or deep part of the corium, and extends vertically and laterally; the surface is of a bright red, soon getting deeper-tinted, and there are pain and burning from the first. In ten days to a fortnight it is fully developed, and then consists of a deeply seated, flatly convex tumor or circumscribed infiltration of a deep and livid red color and with a hard, characteristically brawny base, gradually merging into the surrounding tissues. Softening of the center of the mass and of the skin soon takes place, but there is no pointing, the

* It is, I think, preferable to employ the term carbunculus instead of the more common one of anthrax, as that term is ambiguously used, sometimes meaning the affection under consideration, at others malignant pustule or the local manifestation of splenic fever, but the well-known name bacillus anthracis is exclusively applied to the splenic fever organism.

skin being covered with pustules, and simultaneously giving way at several points, forming numerous cribriform perforations, through which sanious pus exudes. And the slough is visible and is slowly separated, either entire or in parts, and gradually comes away through the enlarged openings, leaving a deeply and irregularly excavated ulcer, with firm, sharply cut, everted edges; the cavity fills up with new granulation tissue, and forms a cicatrix, often pigmented, and perhaps puckered, but smaller than might be expected from the size of the original sore.

Variations.—Sometimes, when at its acme, the skin over it becomes bluish-black and gangrenous, a blood-filled bleb is formed, or the whole skin breaks down into a dirty, pulpy mass; or instead of moist, there is dry gangrene, the whole of the dead tissue drying into a hard brown or black eschar, which separates in the usual way. Or, again, the process may extend, the central changes being repeated at the periphery, with copious and exhausting suppuration. The general disturbance is considerable. Rigors, elevation of temperature, general aching, and other febrile symptoms, varying according to the extent of the lesion, are present in all but the smallest carbuncles. Where there is extensive sloughing septic fever is often developed. The duration is then from two to six weeks, according to the age and vital powers of the patient and the size of the carbuncle, which may be as large as a soup plate; the most common size, however, is from one to three inches.

Etiology.—It occurs more often in men than women, and in middle and old age. It is most common in those who are suffering from constitutional depression from causes similar to those of furunculosis. It is a not unusual complication of diabetes, and its favorite positions suggest that its site is often determined by a local injury from pressure or otherwise, but this has not been definitely proved.

Pathology.—The generally received view is that the process is clearly analogous to that of the furunculus, due to the same staphylococci, but the process lies deeper. Though, like the furunculus, it is said to begin in the sebaceous and sweat glands and hair-follicles, it goes down into and travels along the planes of the subcutaneous tissue, as it has not the lateral limitations of the boil, but vertically is bounded by the fascia.

Collins Warren * of Harvard University, however, explains it as follows: The process begins in foci of inflammatory cells in the subcutaneous tissue; these coalesce and extend up the columnæ adiposæ, which swell, elongate, and disintegrate, the cells eventually reaching the surface and forming a pustule round the hair-follicle; laterally, the inflammation spreads along the lymph channels and vessels that branch off from these fat columns, so that the whole mass of the corium becomes involved in the destructive inflammation, except a thin superficial layer which lacks the channels present so abundantly below. Those of the pustular points visible on the surface which are not seated at the hair follicle are collections of wandering cells, dilating the papillæ into peg-top-shaped cavities, and thinning the rete over them until it gives way. The same process extending subcutaneously, the infiltration becomes so dense that the blood-vessels are pressed upon, and all the tissues break down except the more persistent fibrous bands which bind down the integument in the back, and which remain at the bottom of the cavity and form the well-known tough, adherent sloughs.

Thus, in Warren's view, a carbuncle is primarily a suppuration in the subcutaneous tissue, and secondarily infiltrates the corium by channels which only exist where it is thick, and where there are rudimentary or lanugo hair follicles, which do not reach down to the fat. In parts where the skin is thin these columns do not exist; the cribiform appearance is not developed, the pus oozing out at one or more less resisting spots, traveling along a lymph space to reach the papillæ.

While pus organisms were not known to Warren as the primary cause, his explanation of the subsequent mechanism of the process is not invalidated.

Diagnosis.—The carbuncle is distinguished from the *furuncle* by its much greater size, its flatter shape, its brawny border, and, when it is breaking down, by the multiple instead of the single opening and the complete destruction of the skin over the sloughy tissue beneath; from more *diffuse phlegmonous inflam-*

* "Columnæ Adiposæ, with their Pathological Significance in Carbuncles and Other Affections." A small monograph. (Cambridge, U. S., 1881.)

mations, by its circumscribed brawny border, the greater painfulness, and the cribiform perforations.

Prognosis.—This depends upon the age and general health of the patient and the size and course of the carbuncle. As at the commencement it is impossible to predict the size and course, the prognosis must be guarded; especially must this be the case in old people and those broken down by disease, *e. g.*, diabetes. Those on or near the head and face are considered to be more serious than the others.

Treatment.—As in furunculosis, careful investigation into the patient's general health, especially as regards diabetes, is an important preliminary, and a supporting treatment is generally advisable from the first. Alcohol in any form, however, is better avoided, at all events until the contents of the carbuncle have been evacuated, as it is liable to increase the tension, and therefore the pain of the inflammatory swelling. When, however, it is opened, and there is free suppuration, alcohol, preferably, as a rule, in the form of port or burgundy, may be required. Perchlorid of iron in full doses (3ss of the tincture or liquor every four hours) is often very valuable, and where there are any signs of septicemia, quinine in full doses (gr. 5 or even gr. 10 of the hydrochlorate every four hours) often acts most effectually. Care must be taken to obtain sleep, if necessary by anodynes, hypodermic injections of morphia (1-6 to 1-4 gr.) being one of the best forms. Chloral hydrate is indicated only when the pain is moderate. Every possible means must be adopted to improve the general condition and surroundings.

Locally, the old classical treatment of linseed poultices and crucial incisions is abandoned by general consent, and boils are likely to be excited in the neighborhood of the carbuncle by poulticing. The only applications of this class at all permissible are boric acid lint wrung out in hot water, or compresses formed of pads of Gamgee tissue wet with hot carbolic solution 1 in 40 and covered with oiled silk.

If the carbuncle is seen in an early or spreading stage a solution of carbolic acid 1 in 30 should be injected subcutaneously all round the carbuncle. This, if done thoroughly, almost invariably stops the extension. Hot compresses of carbolic solution may also be applied over it. As soon as there is softening the purulent contents should be evacuated, the cavities

thoroughly syringed out as far as possible with carbolic lotion 1 in 40 and crystals of carbolic acid pushed into all the openings. Sloughs as they become loosened should be removed as soon as possible, and it has been recommended not to wait for loosening, but to scoop them out with a sharp spoon or cut away as much as possible. This is the best plan for small sloughs, but with large ones may be attended with serious bleeding not easily controlled, and in these it is best to keep on introducing strong carbolic acid until the septic process has terminated. Rushton Parker recommended early excision of the whole lesion, but few patients will consent at this stage to an operation of this kind. Mercurial plasters, such as No. 88 Beiersdorf, assist in removing the brawny induration.

HERPES.

Deriv.—ἕρπης, a creeping.

The meaning of this term has much changed. As its derivation indicates, it was originally applied to creeping eruptions, but not always of the same kind; thus one set of authors applied it to spreading surface eruptions, as ringworm, or herpes circinatus et tonsurans, terms still in use in this sense in some parts of the Continent. Others used it to designate lupus exedens and spreading cancer, but this use for it is quite obsolete. Many older French writers, such as Bazin,* or Gigot-Suard,† considered a great number of eruptions of various kinds to be due to a diathesis which they call "Herpétisme" and formed such eruptions into the class "Herpétides"; as these views no longer meet with acceptance even in France, they need no further consideration.

In the modern and general acceptation of the term, herpetic eruptions are characterized by the presence of one or more groups of vesicles on an erythematous base. Even this clinical

* Bazin's "Affections cutanées, arthritiques et dartreuses," 2d ed. (Paris, 1868).

† "L'Herpétisme, Pathogénie, Manifestations, Traitement, etc." (Paris, Baillière et Fils, 1870.) Also Lancereaux, "Traité de L'Herpétisme" (Paris, 1883); and Besnier's critique on it, *Ann. de Derm. et de Syph.*, vol. v. (1884), p. 530.

definition includes eruptions of very different pathology, such as herpes iris, whose relations are with exudative erythema, under which it is described; and dermatitis herpetiformis, which is sometimes called herpes gestationis.

In this work three diseases only are classed under herpes:

HERPES ZOSTER;

HERPES FEBRILIS (FACIALIS OR LABIALIS);

HERPES PROGENITALIS OR PREPUTIALIS.

They are all admittedly of neurotic origin, but while in H. zoster the groups are multiple, and follow the course of the cutaneous branches of a nerve ganglion, and as a rule the patient is attacked only once, in the other two recurrence is the rule, no nerve distribution can be made out, and there is often only one group.

HERPES ZOSTER.*

Synonyms.—Shingles; Zona; Zoster; Ignis sacer; *Fr.*, Zona; *Ger.*, Feuergürtel, Gürtelausschlag, Bläschenflechte.

Definition.—An acute inflammatory eruption, consisting of groups of vesicles on an erythematous base, distributed in the course of the nerve fibers in the domain of one or two posterior root ganglia.

H. zoster is a more common disease than is shown by dermatological statistics; my own give 6 per 1000. H. Head at the London Hospital found it to be 1 in 418 medical cases of all kinds. The discrepancy is explained by its being an easily recognized disease which runs a short course, and therefore seldom finds its way to a dermatologist.

Although many qualifying terms have been employed to

* *Literature.*—Author's Atlas, Plates XV. and XVI., shows zoster of the trunk and limbs, of different degrees of severity, and of the ophthalmic division of the fifth nerve. Of the latter also an excellent plate is No. VIII. of the Sydenham Society's Atlas. Kaposi's Hand Atlas, Plate CII., shows severe attack affecting first and second divisions of fifth, and Plate XCIII. bilateral herpes of two divisions of fifth. Dr. Sykes of Exeter points out that Zoster is derived from the Roman "Zooster," which consisted of a bronze portion with studs, which reached *half* round the body, the girdle being completed with leather.

designate the locality of the eruption, there is only one kind of zoster, as far as the eruption is concerned, but the nerve lesion, of which it is the immediate outcome, may be idiopathic or secondary to previous disease.

Symptoms.—The idiopathic form is by far the most common, and is in some cases preceded by prodromal febrile symptoms of an indefinite character and uncertain duration, but commonly all that is observed is slight or severe neuralgia, in the lines of the ensuing eruption, usually preceding the eruption by a few hours to several days, generally, but not always, relieved on the appearance of the eruption, which is, however, attended with tingling and smarting. The eruption commences with the formation of groups of closely set acuminate papules, which speedily become vesicles, irregularly arranged on an erythematous base.

Distribution.—In a previous edition of this work it was pointed out that the eruption did not correspond with a single nerve area on the trunk, but that fibers of more than one nerve probably passed through a single nerve ganglion, and hence widened the area of the eruption. To Head, however, belongs the credit of having conceived the idea of utilizing zoster to find out the posterior root zones, and he with infinite pains observed the distribution of over four hundred cases of zoster, and from these mapped out approximately the areas under the domain of the different posterior root ganglia, and the diagrams thus constructed he has kindly allowed me to reproduce. Various circumstances, as Head points out, modify the position of the vesicular groups in different cases. Thus, on the one hand, only part of a ganglionic area may be attacked, and on the other, more than one ganglion may be involved, and two root areas comprehended in the eruption; this is especially likely to occur in the ganglia of cervical 2 and 3 or 3 and 4. The apparent position of the eruptive groups would be different in a barrel-shaped chest as compared to a long narrow one, the nipples and umbilicus being the only safe landmarks.

The nerve fibers of adjacent nerves may be differently distributed in the ganglia in different cases, and their peripheral extension may vary; thus they may extend over the middle line or to varying distances along the limbs.

The main point to be borne in mind is that distribution is

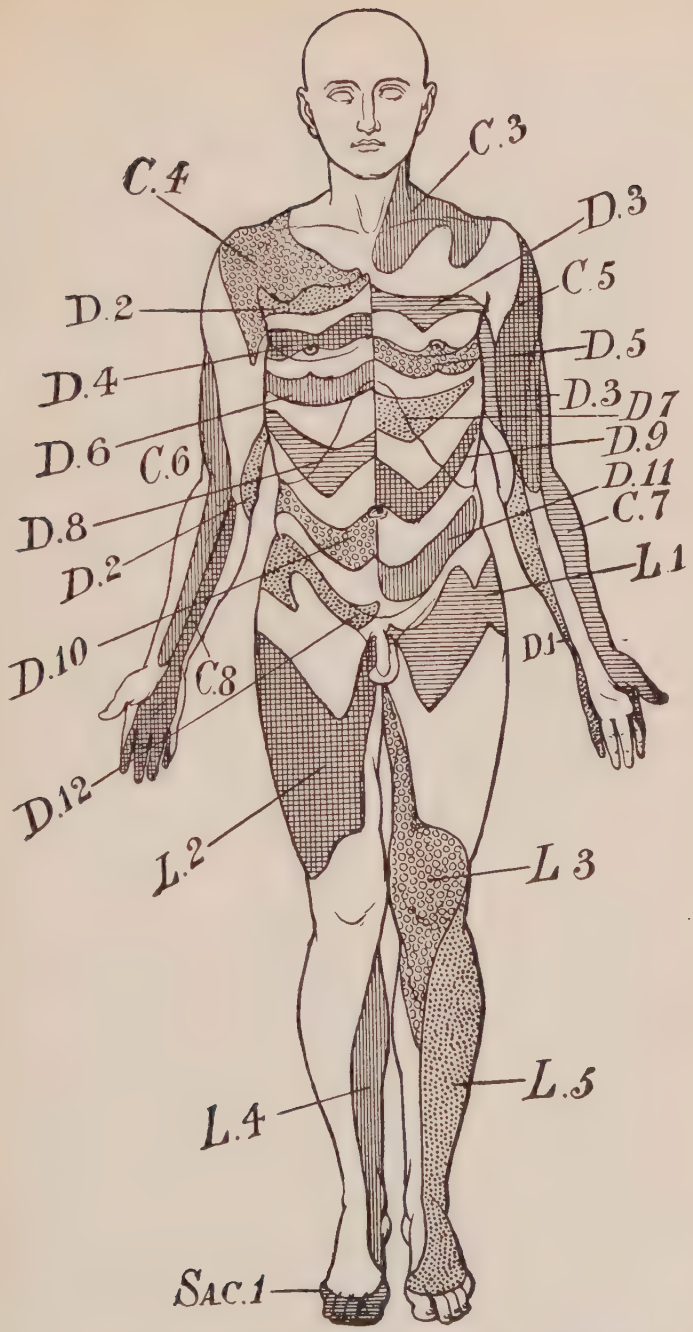


Fig. 16.*—Diagram, according to H. Head, to show the areas occupied by the eruption of Herpes Zoster (front view).

*Copied by permission from "The Pathology of Herpes Zoster," by Henry Head and A. W. Campbell. From *Brain*, autumn part, 1900. Reprint by John Bale & Co , London.

governed by posterior root ganglia zones, and not by single nerve areas.

The typical form which gave rise to the distinctive names which signify a "girdle" affects, therefore, the domain of a *posterior root ganglion* of one of the *dorsal* nerves, hence the eruptive groups are nearly horizontal on the thorax instead of following the slope of the ribs, as a single intercostal nerve does.

The eruption is unilateral; the groups come out successively, the first formed being nearest the nerve center as a rule; and the eruption, as a whole, occupies from three days to a week before it is completely developed. The groups often correspond with the position where the cutaneous branches pierce the fascia or are distributed in the skin, and there is often tenderness, as Parrot pointed out, in these positions.

In an intercostal herpes one group is situated near the spine, another in the axillary region, and a third close to the median line anteriorly, but sometimes a group fails to be developed or remains papular, or there may be more than one group in each region, but the half-girdle is seldom continuous. The vesicles vary in size from a pin's head to a pea, or larger when confluent, and in number from half a dozen to a score in each group. The contents are at first clear, but soon become turbid, and in a simple case soon dry up into scabs, which fall off in a few days, leaving red marks which take somewhat longer to disappear. The whole process, up to the falling off of the scabs, lasts from ten days to three weeks.

Variations.—In a few cases the prodromal febrile symptoms are very decided, but not distinctive, their meaning being unintelligible until the eruption appears. In many cases, on the other hand, the eruption is the first sign of the disease.

H. zoster is by no means confined to the trunk, as Willan thought, calling the eruption when occurring elsewhere H. PHLYCTENODES, though the trunk, especially on the right side, is more often affected than all the other regions added together. It may attack the domain of almost any nerve, though it has preferences. On the head the Gasserian ganglion is involved, and areas corresponding to branches of the fifth are frequently affected, especially the supra-orbital, and in this case the eruption extends on to the scalp, as it also does when the occipital nerve is attacked.

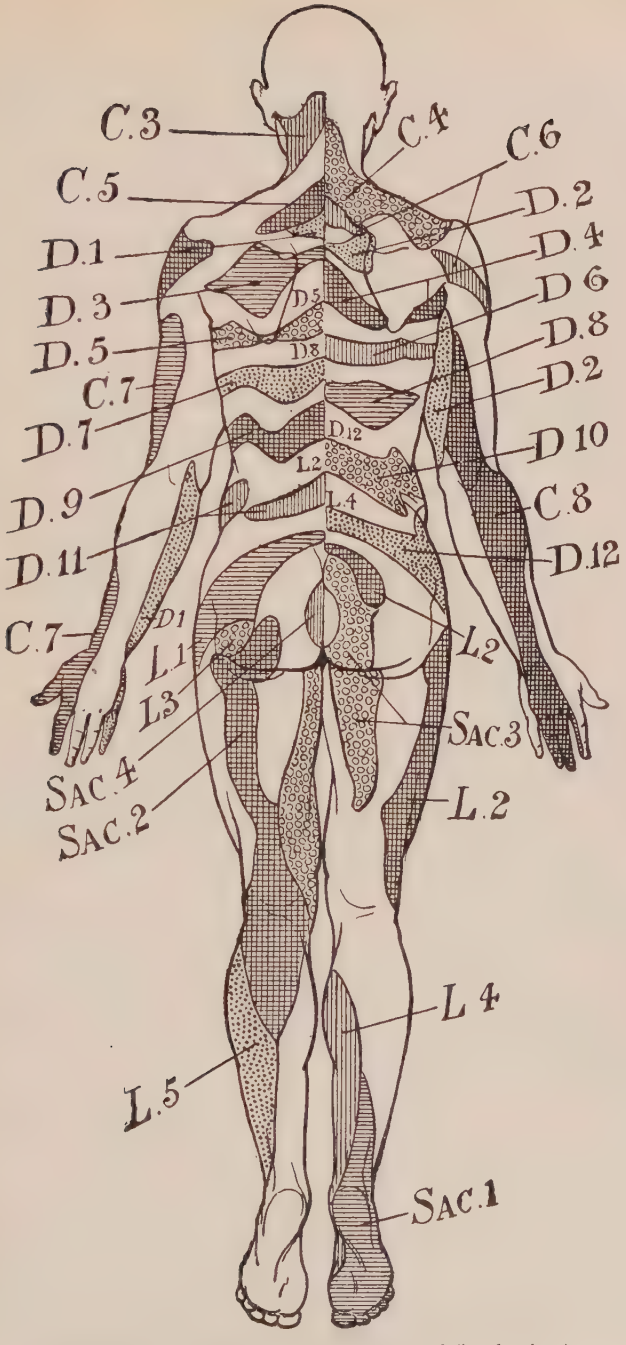


Fig. 17.—Zoster areas, after H. Head (back view).

Sensory areas of the neck, arm, less frequently the forearm and hand, the buttock, genitals, thighs, and other regions, are from time to time affected, and sometimes it may be two neighboring regions, such as the neck and arm, trunk and arm, genitals and thigh, etc., but it is rare for it to attack two distant regions such as the forehead and trunk, on the same or opposite sides as in Hutchinson's and Bradshaw's cases.* It is rare below the knee and very rare on the foot, except when it affects the line of the saphenous nerve, when there may be vesicles on the heel.

Names have been given to designate herpes of these regions, and so authors speak of H. frontalis, ophthalmicus, cervicalis, brachialis, cruralis, genitalis, cervico-brachialis, intercosto-humeralis, genito-cruralis, and so forth. The only difference is in the positions, but of course the eruptive groups are in lines, not in zones, since they follow the nerve ganglia distribution. Head † contends that zoster or zona should always be affixed to distinguish it from herpes febrilis.

* *Lancet*, October 13, 1894, p. 851.

† H. Head carefully noted the distribution of 36 cases of zoster, which he collected in different parts of University College Hospital. These he was kind enough to place at my disposal, and adding them to 64 of my own, the result of the hundred cases was as follows: Trunk, 54 cases; ilio-inguinal, ilio-hypogastric, and genito-crural, 13; cervical, 13; fifth nerve, 8; leg, 8; arm, 3—febrile herpes was not included. In his monograph he gives the following distribution of 414 cases according to the ganglia affected.

Trigeminal		5th Dorsal	38
1st Division	18	6th "	20
2d "	2	7th "	19
3d "	2	8th "	36
	—	9th "	19
Total Gasserian ganglion	22	10th "	26
2d Cervical	1	11th "	22
3d "	15	12th "	18
4th "	21	1st Lumbar	27
5th "	2	2d "	22
6th "	3	3d "	5
7th "	5	4th "	1
8th "	0	5th "	2
1st Dorsal	5	1st Sacral	0
2d "	9	2d "	1
3d "	34	3d "	5
4th "	38		

He infers from this table that the ganglia most commonly affected are

Herpes is very rarely symmetrical,* and then is said to be generally of syphilitic origin, and chiefly affects the fifth pair.† Jamieson ‡ of Victoria records a case of a woman who four days after severe headache and vomiting had also shooting pains in chest and shoulders, and a symmetrical zoster faciei, nuchæ et brachialis. G. Carpenter § also records a case of a child of four with double zoster at the same level. It must be remembered that some cases of extensive H. febrilis of the face are easily mistaken for double zoster.‖ It may occasionally be bilateral, affecting nerves at a different level, and it is common for some of the vesicles to overstep the middle line, doubtless because a cutaneous nerve twig has extended farther than usual. Hemorrhage sometimes occurs into the vesicles, or the inflammation may be so intense as to be purulent from the first, and in rare instances the patches may ulcerate, or even become gangrenous. Scarring, of course, then ensues, and keloid may follow. Zoster, as a rule, does not attack the same person more than once in his lifetime, but there are exceptions; one of the most notable was Kaposi's case.¶ Within a short space of time there were five attacks in the right cervico-brachial region, later on a sixth attack in the right lumbo-sacro-crural region, whilst the seventh, eighth, and ninth outbreaks were in the left cervico-brachial region, and there have been two abortive attacks since.

Tilbury Fox had a patient who had several attacks in the

those which receive afferent impulses from the viscera, through the white ramus of the sympathetic. He also says that the ganglion cells are in two groups of large and small cells, and that the ganglia in which the small cells preponderate are the most frequently attacked. One of the functions of these cells is the perception of pain, and he thus explains the frequent severe pain of zoster, but he does not account for its frequent absence.

* Hence the popular idea, as old as Pliny the Elder, that if it encircles it kills.

† A case of this kind is figured in Hebra's Atlas, vol. ii., Lief. vi., Tafel ix.

‡ *Australian Med. Jour.*, May, 1877.

§ *Brit. Jour. Derm.*, vol. iv. (1892), p. 23, with reference to other cases.

‖ Testut (*loc. cit.*), p. 74, collected thirteen cases of double zoster, but some were certainly H. febrilis.

¶ Abstract from *Wiener med. Wochenschrift*, 1874, 1875, and 1877, in *Med. Rec.*, November 15, 1877.

course of a few years, and always in the summer. Chronic peripheral irritation is the most usual cause of such repetitions. Thus I have seen recurrent herpes round the sinus produced by a diseased tooth. Pearce Gould had a similar case from caries of a rib, etc. Pernet reports a case with four attacks, one intercostal, the other three on the right side of the neck, and he suggests that an uncorrected error of refraction was the cause.

Grindon * collected sixty-one cases of recurrent zoster.

Complications.—Iritis and more or less severe conjunctivitis is apt to accompany herpes of the ophthalmic division of the fifth, especially, but not exclusively, when the nasal branch is affected, and in one case hypopion keratitis occurred (Flemming), and in another retinal hemorrhages. Severe scarring is also a frequent sequel to this form of herpes. When the second branch of the fifth is involved patches of herpes may also develop on the buccal mucosa, palate, tonsil, and tongue on the same side, and Stephen Mackenzie once found at a post-mortem herpes in the pharynx and esophagus. The teeth on the affected side sometimes fall out, and even necrosis followed in Paget's case.† True pharyngeal zona is unilateral and seldom recurs. Most of the bilateral pharyngeal herpes are frequently recurrent, and are really herpes febrilis.

Occasionally the function of the neighboring motor nerve ‡ has been interfered with, this being most frequent in facial H. zoster, where paralysis of the third or seventh sometimes ensues. Vernon, Broadbent, Waren Tay, and Voigt have also reported a similar association. Howard relates a case of ophthalmic herpes with iritis followed by ptosis; and Silcock has had two cases of complete ophthalmoplegia, externa and interna, following H. ophthalmicus. Paralysis of the seventh is especially liable to occur when the zoster affects the occipi-

* *Amer. Jour. Cut. and Gen.-Urin. Dis.*, vol. xiii. (1895), pp. 191 and 252. Some other cases in annotation of *Lancet*, April 12, 1902, p. 1050.

† *Brit. Med. Jour.*, vol. ii. (1866), p. 402.

‡ *Brit. Med. Jour.*, August 6, 1870. Waller of Amsterdam, quoted in *Brit. Med. Jour.*, September 19, 1885, relates two cases, one of paralysis of the seventh and another of that supplying the deltoid, following zoster of those regions. Both recovered under electricity. Other cases are on record.

tal region or front of the neck, *i. e.*, second cervical. Eichhorst collected eighteen cases (Head). There is loss of faradic excitability of the facial muscles. Besnier relates the case of a student who, while studying a case of ophthalmic herpes, was himself attacked, and permanent facial paralysis ensued. Head saw a case where zoster over the first dorsal area was accompanied by paralysis of all movements of the hand and fingers.* J. Duncan † records two cases of old women in whom H. zoster was accompanied by hemiplegia of short duration, and probably, therefore, of vaso-motor origin. Weiss reports a symmetrical zoster affecting branches of the median, recurring at intervals and producing trophic disturbances of the skin and nails supplied by the median nerve, and "thumb clonus," *i. e.*, a tremor, lasting a quarter of a minute, excited by sharp flexion of the palm, and ceasing with extension of it.

Although the neuralgic pain usually subsides when the eruption is out, and may even be absent altogether, sometimes, owing to a chronic neuritis having been set up, the pain persists, and in old people, in whom it is specially liable to occur, becomes of serious moment from exhaustion consequent upon the pain and loss of rest.

In a few cases persistent pruritus, hyperesthesia or anesthesia, and in a case of Schwimmer's white patches, were left in the area of the affected nerve; and Barthélemy and others have noted cases of pre-eruptive or simultaneous enlargement of the glands in the neighborhood of the zoster, and argue from this against the primary nerve origin of the disease.

Tenneson, Jeanselme, and Leredde draw attention to the occurrence of "aberrant vesicles" scattered about at a distance from the principal groups, but generally on the same side of the trunk. Féré and Girandeau have also recorded cases, and the occurrence of these vesicles is used as an argument in favor of zoster being a general rather than a local disease. Tenneson ‡ says that daily examination of the whole skin in a case of zoster

* This he explains by the intrinsic movements of the hand being innervated by the motor part of the first dorsal root with that of the eighth cervical.

† *Jour. Cut. Med.*, vol. ii. (1868), p. 241.

‡ References to cases may be found in *Lancet* annotations, September 24, 1898, p. 822, and October 27, 1900, p. 1223.

would show these vesicles in nine cases out of ten. My own observations, since my attention has been drawn to the point, tend in the same direction.

Children.—The affection is more common in children than in adults, and in girls than boys. The pain is never persistent, as in the aged, but the inflammation is more frequently intense enough to produce suppuration and gangrenous ulceration. In a boy of four, observed by J. Deas, the gangrene was so extensive as to lead to septic absorption and death of the child. The region of the fifth nerve is seldom affected, except in the form of febrile herpes.

Etiology.—In my practice three-fourths of the cases were under twenty, and two-thirds of these under thirteen years; nearly all the rest were over forty. Head's statistics emphasize the same fact—viz., the prevalence in childhood; and three-fourths of all these cases were under twenty-five.

It is rare in infants, but Bohn records two cases, æt. five and seven months respectively, and Lomer records one in an infant of four days old. There is no limit at the other end as to the possibility of its occurrence; but while old age is not a factor as regards frequency, it is as regards the severity of the attack.

Sex appears to have no influence. One hundred and twenty males to 105 females, and 104 right-sided to 93 left (Harrison). There is a fairly general consensus of opinion that chills are a frequent exciting cause, and the possibility of atmospheric influences is favored by the frequent occurrence of cases in groups. Hence some, like Erb and Landouzy, regard it as an acute specific and infectious disease, and hypothetical microbes have been invoked to the aid of the hypothesis, which is also supported by Kaposi * on the following grounds: that it generally occurs in small epidemics, recurring irregularly, but especially in spring and autumn; that it is very unusual for a person to be affected twice; that the various epidemics exhibit various types, some in which all the cases are slight, while in others they are all severe, to which he might have added the definite course of the disease. Kaposi presupposes a toxic influence on the nerve centers. Even if this hypothesis be accepted for these groups of cases, it leaves many sporadic cases

* Kaposi, *Wiener med. Wochenschrift*, Nos. 25 and 26 (1889). Abs. *Brit. Jour. Derm.*, vol. ii., January, 1891.

traceable to definite causes, so that epidemic influence should only rank as one of the etiological items. Thus the occurrence of zoster in persons taking arsenic,* first pointed out by Hutchinson, of which several instances have come under my own observation, have been noted sufficiently often to point to an etiological relationship, not inexplicable, since arsenic acts on the peripheral nerve ends, and peripheral neuritis is sometimes one of its toxic symptoms; an exciting cause, such as a chill, is perhaps necessary also. Sattler reports a case from coal gas, and Leudet from carbonic oxid poisoning, possibly due to a toxic neuritis.

Severe mental emotion† has appeared to be the exciting cause in a good many cases.

It occurs frequently in epidemic cerebro-spinal meningitis and also in cerebral meningitis from other causes, and is then usually bilateral; but it is said to be more common in non-tubercular meningitis. At the same time it is not infrequent in tubercular subjects (Leudet, Barié, Leroux, etc.), and in ataxics (Charcot, Fournier, Buzzard, etc.). Various mechanical peripheral nerve irritations are noticed in the next section as exciting causes. Probably Touton's case, in which an abortive herpes followed the intra-muscular injection of salicylate of mercury, was from that cause, rather than from the nature of the drug. Severe mental emotion has appeared to be the exciting causes in some instances.

Herpes has occurred in several instances as the result of contusion or other lesions of the terminal nerve filaments, such as on the cheek and eyelids following a blow; lumbo-abdominal herpes after a strain; of the forehead, eyelids, and cheek, in one case, and right upper dorsal and intercosto-humeral in another case (Pernet) after tooth extraction. Gaucher and Bernard observed three such cases. Bókai relates several cases in which an apparent zoster communicated

*Neilsen found that of 777 cases of psoriasis 557 were given arsenic, and among them 10 cases of zoster occurred, *i. e.*, 1.8 per cent., while not one case occurred in the 220 who received no arsenic and were treated with large doses of iodid of potassium. It was frequently noted in the Manchester outbreak of arsenical poisoning from beer contamination in 1900–1901, and was one of the symptoms which led to the detection of arsenic as the cause

†A. Roche, *Lancet*, October 13, 1894, p. 857, relates and quotes a case.

chicken-pox; the suggestion offered is that the apparent herpes was really a varicella with a circumscribed zosteriform distribution, or it might be they were cases of unusually abundant aberrant vesicles.

Pathology.—On the whole, the evidence points to the eruption of idiopathic zoster being due to a toxic inflammation of the posterior root ganglion of the nerve area affected. The arguments in favor of its being an acute specific poison have already been stated, and Head compares it to acute anterior polio-myelitis. It has also been shown that in sporadic cases various kinds of nerve poisons may set up a similar inflammation, or, at all events, produce the eruption of zoster.

But while the condition most frequent is a descending interstitial neuritis of the posterior root ganglion, zoster is produced by any irritative lesion or condition, in any part of the tract from the cord to the periphery of the nerve supplying the affected skin. The proofs of this are contained in the following:

That zoster is a neurosis was inferred by Rayer, but was first anatomically proved by Baerensprung,* who showed that there was an interstitial neuritis of the posterior ganglion, and of the trunk of the nerve issuing from it to supply the region of the skin, where the eruption was distributed. This observation is true for the majority of cases, but not for all, as Baerensprung asserted. Weidner † found a lesion of the posterior spinal root between the cord and ganglion, they themselves being unaffected. Chronic inflammation of the posterior columns of the cord has been found associated with zoster, while the posterior root, the ganglion, and nerve were unaffected. As a symptomatic condition it is observed in those diseases especially involving the posterior columns, such as tabes and general paralysis of the insane, and in myelitis often at the upper level of the anesthesia, or its superjacent hyperesthesia (H. Head). Bramwell suggests that bilateral herpes at the same level (very rare) is generally due to myelitis.

Dubler ‡ has demonstrated a peripheral neuritis with absence of central disease in a case of zoster, where there were perios-

* *Die Gürtel-Krankheit, Charité-annalen*, Bd. ix., Heft 2 and 3 (1861-62), Berlin.

† *Berlin klin. Wochenschrift.*, 1870.

‡ Virchow's *Archiv.*, May, 1884, p. 185. Abs. in *Brain*, 1884, p. 550.

teal swellings on the ribs. The neuritis extended into the muscular twigs, thus accounting for the motor paralysis sometimes associated with zoster.

Curschmann,* and Eisenlohr found multiple neuromata in the domain of the affected nerves, with the spinal cord and ganglia intact, as were also the nerve fibers in the neuromata, which were due to a perineuritis. Neuromata followed herpes in two other of their cases, and in those of others since their report.

In a case of widespread herpes Hans Hebra found at the necropsy two foci of disease in the cervical ganglion.

The lesion is not necessarily inflammatory. Wyss and Sattler in cases of H. frontalis † found hemorrhage into the Gasserian ganglion; hemorrhage into the cauda equina with crural herpes has also been found. Charcot had a case due to an embolus in a branch of a sacral artery, which pressed upon one of the spinal roots of the cauda equina at the foramen.

Nevertheless, interstitial neuritis is the most common lesion, irrespective of the origin or position of the exciting cause; thus herpes has followed neuritis of the trunk, produced by gunshot or other injuries (Mitchell, Morehouse, Kean, etc.), cancer of the spinal column and of the pleura (Charcot and Ollivier). Leprous deposit and peripheral irritants, *e. g.*, arsenic to destroy the nerve of a tooth produced herpes of chin, cheek, and ear of the same side (Lesser). The application of the galvanic current has twice produced it—once where the poles were applied (Liveing), and once away from them (Köbner).‡ Similar cases are those after extraction of a tooth, tapping hydatids, a hydrocele and psoas abscess, and after re-vaccination (C. Thompson). It has also been ascribed to reflex irritation (Jewel). Zoster has also been recorded in connection with cerebral lesions, but not any special ones except those of general paralysis, in which the posterior columns of the cord are often affected also, while in zoster, with other cerebral lesions

* Quoted in *Viertelj. für Derm. und Syph.*, vol. xvi. (1884), p. 157.

† The references to the following facts are given in a paper by myself on the lesions of the nervous system related to cutaneous disease, in October number of *Brain*, 1884, p. 363.

‡ *Neurol. Centralbl.*, May 1, 1890.

the other parts of the nervous system have not been shown to be free from secondary or other changes.

The most recent and comprehensive examinations of the nerve changes are by Head and Campbell,* who examined twenty-one cases from a few days to a year and a half after the eruption. In the most acute cases they found hemorrhages with inflammatory exudation into the root ganglion, destroying the ganglion cells more or less completely, and leading ultimately to proportionate sclerosis of the ganglion. There were secondary degenerative changes upwards in its posterior root and in the posterior columns of the cord, and downwards of the peripheral sensory nerves.

By mapping out the area of skin affected during life and determining post-mortem which posterior root ganglion was affected, they were able to trace on the neck and trunk the skin areas supplied by the various ganglia in many cases, and to infer the rest from the skin lesions of other cases. These areas do not always correspond with the sensory branches of any one nerve, but with several branches of nerves, linked by some of their fibers passing through the same ganglion. This distribution Brissaud explains by his metameric theory of the spinal cord being composed of a series of segments superimposed and relatively independent, and that zona occupies the domain of one of these segments. Pfeiffer tried to prove that it followed the distribution of the cutaneous arteries, and Abadie † contends that it is not the sensory nerves, but the vaso-dilator fibers of the sympathetic which are involved. Head and Campbell's explanation, as supported by their anatomical researches, is probably the correct one as far as idiopathic herpes is concerned, but the irritation may also be central, as in tumors of the spinal cord, in tabes, and general paralysis, or peripheral, as in arsenical poisoning, caries of rib, etc.

* "The Pathology of Herpes Zoster and its Bearing on Sensory Localization." Reprinted from *Brain*, autumn part, 1900. John Bale, Sons & Danielsson, London, 1900. An important and highly illustrated monograph.

Head's article on "Herpes Zoster," in vol. viii. of Allbutt's "System of Medicine," gives a good *résumé* to date, 1899.

† Barbieri has shown that the posterior ganglia are connected with large numbers of sympathetic fibers.

The **anatomy** of the eruption itself has been investigated by Biesiadecki,* Auspitz, Basch, Ebstein, Haight of New York, Unna, † Hartzell,‡ Campbell and Head, § Kopytowski, ‖ etc. They concur in the following: that the vesicles are formed in the upper part of the rete in the same way as in eczema, the process proceeding from the papillary layer in which the vessels are dilated. The vesicles are unilocular, but subdivided imperfectly by the effused fluid forcing its way between the rete cells, elongating and compressing them, together with the cells of the sweat ducts and hair follicles, into a network, the meshes of which contain altered epithelial cells (protozoa of Pfeiffer) and leukocytes which have worked their way thither through the rete. The papillæ are enlarged, and, together with the corium, infiltrated with leukocytes, which may extend into the subcutaneous layer. Inflammatory changes are also to be found in the nerve twigs of the corium, which Campbell and Head have shown to persist as degenerative changes in the larger branches from ten days after the onset of the eruption. Both Bewley and Pfeiffer describe cells they consider to be giant cells in the rete, but this interpretation is not accepted. Kopytowski examined vesicles from sixteen cases at various stages. He found the vesicles intercellular in origin, and that some of them were multilocular. He found on the whole the same changes in the cells as observed by Unna, but does not admit his explanation of ballooning epithelial degeneration, and considers that the pathological process is the same in zoster as that of ordinary inflammations, and that it is of toxic origin.

Diagnosis.—The diagnosis of zoster is generally easy enough; a unilateral eruption in groups of large vesicles on an erythematous base, arranged along the course of one or more cutaneous nerves, is sufficient to establish it. The large size of the vesicles of herpes, which dry up instead of rupturing and emitting a continuous discharge, and the nerve distribution, are distinguishing features from *eczema*. It is sometimes difficult to decide between zoster and *H. facialis* or *genitalis*, but this is not of much practical importance. The presence of pain before the eruption, and the existence of several groups unilaterally distributed, or unusual severity in the character of the eruption, would be in favor of zoster, while previous attacks and a single group, or being on both sides, would indicate the

* "Beiträge zur Phys. und path. Anat. der Haut," p. 245. (Wien, 1867.)

† Unna, "Histopathology."

‡ Hartzell, *Jour. Cut. and Gen.-Urin. Dis.*, September, 1894. The protozoa-like bodies of herpes zoster.

§ Campbell and Head, *loc. cit.*

‖ Kopytowski, *Archiv. f. Derm. u. Syph.*, vol. liv., 1900, p. 17. Illustrated.

trivial forms. Many of the reported double zoster cases are really H. febrilis, and on the face it may be especially difficult to decide, but the more abundant the eruption on both sides of the face the less likely it is to be true zoster. According to Thibierge, ophthalmic zoster always scars—I should have said *nearly* always. The other herpetiform eruptions are always bilateral.

Prognosis.—Unless the lesions are more severe than usual, two or three weeks are nearly always sufficient to bring zoster to a favorable termination; but continuous irritation of the nerve or its branches may lead to prolongation by the formation of fresh groups, and of course when there is ulceration or gangrene longer time is required for repair.

Treatment.—Since the tendency is to run such a short, favorable course, treatment is fortunately scarcely required. It is very doubtful whether we can shorten its duration, and very difficult to decide whether a rather shorter course than usual is spontaneous or due to the drug employed. Ashburton Thompson and Bulkley, however, state that one-third of a grain each of phosphid of zinc and nux vomica extract at the commencement, and every three hours afterwards, control the pain and abort the eruption. Where the neuralgia persists, antipyrin or phenacetin in ten-grain doses, quinine in full doses, iron, strychnia, arsenic, salicylate of soda, and cod-liver oil and a highly nutritious diet, generally offer the best chance of combating the neuritis; blistering over the nerve root and hypodermic injections of morphia are sometimes required. External treatment is useful to protect from irritation and to allay the pain or discomfort. Dusting powders of starch or zinc, with morphia and camphor added where there is much smarting, put thickly on cotton wool and bandaged on, give great relief. Calamin lotion painted on frequently and allowed to dry will sometimes diminish the severity of the lesions, if commenced sufficiently early.

Collodion painted on has appeared to me to hasten the absorption of the fluid and drying up of the vesicles; the addition of morphia is often desirable here also. The local treatment for persistent after-pain is hypodermic injections of morphia, and repeated blistering over the root of the nerve, which in some cases has answered admirably in my hands. Counter-

irritation is also recommended at an early stage at the tender spot, where the cutaneous trunks pierce the fascia, and is said to relieve both the pain and the eruption. Rubbing the part with menthol or chloroform epithems gives temporary relief, but better than all, in some cases, is the continuous current applied in the course of the nerve; from ten to twenty cells of a Leclanché battery should be applied for about ten minutes daily. Duhring says that the continuous current applied before the appearance of the eruption will sometimes render the impending attack abortive, but this I have not tried; he also recommends ℥ss to ℥j of the fluid extract of grindelia in ℥j of water as a lotion. Leloir and his pupil Dupas strongly advocate the use of alcohol, with two or more per cent. of resorcin, thymol, menthol, or other antiseptic, applied constantly on pads either to abort or shorten the course of the disease.

HERPES FACIALIS.*

Synonyms.—Herpes labialis; Herpes febrilis; Hydroa febrilis.

Definition.—A herpetic eruption, occurring chiefly on the lower part of the face.

This eruption is very common, and occurs most frequently round the mouth, especially on the lower lip, but it may appear on any part of the face below the forehead, on the auricle, on the mucosa of the conjunctiva or of the mouth, such as that of the cheeks, palate, uvula, pharynx, tonsils, and larynx; and Barthélemy mentions a case, in an old woman dying of pneumonia, in whom some patches on the chest, with very large vesicles, were referable to herpes febrilis rather than to zoster. It comes out suddenly, with heat and tension of the part, followed in a few hours by a slightly papular eruption, which soon becomes vesicular on a reddened base. The vesicles enlarge to the size of a hemp seed or a small pea, are arranged irregularly in one or more groups of six to twelve each, and in a few days dry up and form small scabs, which drop off a few days later,

* Author's Atlas, Plate XVI., Figs. 2 and 3, one showing bilateral distribution. Kaposi's Hand Atlas, Plate 105, is also symmetrically bilateral, the lower part of the face being free. There is no history, but it was more probably H. febrilis than zoster.

leaving only transitory reddened marks, the whole process occupying eight to ten days. I have once seen a gangrenous spot a quarter of an inch in diameter in an H. labialis.

In the vast majority of cases, as Hutchinson first pointed out, shivering, or at least a sense of chilliness, precedes the eruption, and there is often a considerable rise of temperature, due, however, to the disease in which the eruption is an incident. It is therefore chiefly met with in those diseases in which shivering is a prominent symptom, such as febrile colds, pneumonia, ague, tonsillitis, etc., but only occurring once in each attack. Vogel says that in predisposed persons local irritation, such as contact of the lips with pepper and salt or other spices, and even healthy saliva, will produce an attack.

It is a prominent feature in cases of so-called "herpetic fever," which are reported from time to time, often occurring endemically, and the eruption may be extensive. In all these cases "shivering" is a prominent symptom, and in no other way is the herpes related to the symptoms or cause of the endemic, which has in some cases been traced to defective hygiene, especially sewer-gas poisoning. The herpetic outbreak is in some cases associated with defervescence. Epidemics of this kind have been reported by Savage,* Seaton,† Lake of Teignmouth, etc.

Pathology.—Its connection with shivering suggests a neurotic origin, possibly a reflex irritation of the sympathetic ganglia of the affected region through the fifth nerve. The following case of Sulzer of Paris is susceptible of such an explanation, although the possibility of a septic origin cannot be excluded.

In 1891 forced dilatation of the urethra was followed by an herpetic eruption of the right cornea, a similar operation in 1896 was followed some hours afterwards by violent chills and a temperature of 105.3° F., delirium, and three days' unconsciousness. The whole face was covered with an herpetic eruption, which also involved the buccal, pharyngeal, and nasal cavities, the eyelids, conjunctivæ, and corneæ. The patient was in bed for six weeks, and the left eye got well, but an herpetic eruption of the right cornea recurred every three weeks; as

* *Lancet*, January 20, 1883, and January 28, 1899, p. 252, a sporadic case.

† *Clin. Soc. Trans.*, vol. xix. (1886), p. 26.

soon as one crop got well another appeared, and the left eye was again attacked. These attacks lasted three months. Temporary increase of previous astigmatism occurred, but he eventually got well.

St. Clair Symmers * has isolated a microbe from the vesicles of a pneumonic herpes labialis. It was of either rod or thread form, and in the presence of oxygen when cultivated on gelatin, but not on potato, developed a pea-green pigment, resembling that of Frick's bacillus virescens, and different from pyocyanin.

Prognostic Significance.—Its frequent occurrence in sthenic pneumonia, which begins with a rigor and runs a pretty definite course, whilst it is less likely to occur in asthenic pneumonia, is perhaps the foundation for the notion that herpes is of good prognostic significance in pneumonia, a view advocated by Germain Sée; but as a rule it is rather only an evidence of febrile disturbance, past or present, with shivering. Ornstein's statement that in ague whitish-yellow crusts point to a slight fever, brown ones to a more severe, and painful crusts to pernicious attacks, requires confirmation. Unless irritated it invariably takes a favorable course, but in a few instances tends to recur for years, often without apparent cause. Thus one of my patients, a lady æt. seventeen, had one or two attacks a year from her earliest childhood, and she could not connect it with any definite cause. Another case, a gentleman æt. fifty-nine, doubtfully gouty, had had it five successive years, "excited by the summer sun and the sea air," rarely under other circumstances. In both these cases the eruption was on the lower lip, but not always on the same place, but it may recur in other parts of the face. Like its congener, herpes progenitalis, gouty conditions predispose to attacks. Dubreuilh has written a paper on "Recurrent Herpes" (not zoster), in which he relates several similar cases.

Treatment.—The only treatment required is protection from irritation, which may be afforded by calamin lotion, which also allays itching, and if commenced early may diminish the severity of the attack. Starch and zinc dusting powders or weak boric acid ointment are also good applications. Hutchinson believes that the recurrent form is definitely controlled by the use of arsenic.

* *Brit. Med. Jour.*, December 12, 1891, p. 1252.

HERPES PROGENITALIS.

Synonym.—Herpes preputialis.

Definition.—An eruption, consisting of vesicles in a group, on an inflamed base, occurring on the genital organs of both sexes.

This eruption is not uncommon, and would be of small importance were it not that its frequent recurrences give great annoyance to the patient and excite apprehensions of syphilis. In men it occurs most frequently on the inner surface of the prepuce, less often on the outer surface, in the sulcus, glans, meatus, the sheath of the penis, or even in the urethra (Diday). In women its most common position is on the inner or outer surface of the labia majora, on the mons veneris, and occasionally on the nymphæ, or prepuce of the clitoris, and on the cervix uteri near the os externum. Obviously, therefore, the name most frequently used, H. preputialis, is inappropriate.

The eruption is preceded by itching and burning of the part, followed in a few hours by the development of a vesicle or a group of vesicles, seldom more than one group, on an erythematous base; there may be swelling and edema of the prepuce. The vesicles are the size of a pin's head, contain a clear fluid, and when on a moist surface look like opaque white specks; they rupture in a few hours, leaving tiny excoriations, which heal in two or three days. When on an external part they dry up, leaving a little scab, which soon falls off. The whole process is a matter of a week or less.

Variations.—When irritated, *e. g.*, by repeated sexual intercourse, mistaken zeal in the use of caustics, etc., the disease may be kept up for weeks from ulceration, which may spread and suppurate freely, with tenderness and enlargement, and even suppuration of the inguinal glands * (Berkeley Hill). Severe neuralgia of the branches of the sacral, pelvic, or sciatic nerves, or gangrene of the site of the eruption, as Mauriac †

* Taylor and Bumstead, in their work on syphilis, relate a case where a man had sciatica four times a year for ten years, and seven times out of ten with herpes of the penis.

† Mauriac relates somewhat similar cases of neuralgia in "Herpès névralgiques des organes génitaux"; and in his "Ulcérations non virulentes des organes génitaux," 1878, p. 49, gives a case of gangrene with H. progenitalis.

describes, is to be explained by such cases being examples of H. zoster, rather than H. progenitalis. On the other hand, in Lausseday's * case herpes recurred in a patch on the sacro-lumbar region at every catamenial period for five years, except during three months, when she had influenza and bronchitis, and this evidently belongs to the present affection and not to zoster. A similar case has come under my own observation, but with fewer recurrences and not connected with the catamenia. Dubreuilh cites similar cases.

Etiology.—It is much more common in men than women, and is usually, but not always, as Doyon asserts, preceded by venereal disease, such as gonorrhea, or a soft chancre. It comes out most frequently two or three weeks after the sore is healed, or the gonorrhea cured. It recurs every two or three months, or, in some cases, at regular intervals of three weeks or a month, the recurrences being generally determined by local irritation, especially coitus, passing a catheter, etc. For my own part, I am more inclined to ascribe it to such local causes than to internal disturbances, though it may arise from the gouty diathesis, excesses in eating or drinking, dyspepsia, or exhaustion from any cause, provided that the last attack is not very recent. These recurrences may last for years, and then cease, unless the tendency is reawakened by fresh local venereal troubles. On the other hand, the relapses are sometimes permanently interrupted by a severe general illness, such as smallpox, syphilis, etc. (Berkeley Hill).

Pathology.—The presumption is in favor of the disease being due to a reflex excitation of the neighboring sympathetic ganglia, through irritation of the sensory nerves of the part.

Diagnosis.—No difficulty can arise in a simple case. The group of small vesicles on a red base is quite characteristic; but when not seen until suppuration has occurred it may easily be mistaken for a *soft sore*. When a group has coalesced the resulting excoriation can be seen with a lens to have a gyrate outline—occasionally there is only a single vesicle, when the possibility of its being herpes will probably be overlooked. The chancre is flattened at its base and secretes scarcely any liquid, whilst, according to Leloir, the herpes discharges a large

* *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 408.

quantity of serous fluid when pressed, and is reduced in size; but in some cases nothing but time or auto-inoculation can decide positively. In a few days, if the parts be kept separated and iodoform applied, the ulcer will clean and begin to heal, while a soft chancre will take longer before improvement sets in.

Treatment.—Wash the parts two or three times a day, and keep the surfaces apart with a piece of lint soaked in weak lead lotion, or with wetted boracic lint, which I have found answer admirably; or dry carefully and apply starch and zinc powder, and put a strip of lint or linen over it. Where suppuration has occurred, iodoform, followed by lotio nigra, would be appropriate, with rest, if the glands are enlarged. To prevent recurrences the patient should be enjoined to wash carefully immediately after coitus, and also daily. Circumcision has been recommended where the prepuce is long, but often fails, the eruption coming elsewhere. The gouty diathesis should be combated by appropriate measures, such as giving alkalies, regulating the diet, avoiding fermentable liquids, such as beer, champagne, etc. Doyon * says, in an interesting and exhaustive essay on the subject, that the waters of Uriage, of which he is the inspector, are the best means of cure for such cases.

Persistent Balanitis. A constantly recurring surface inflammation and excoriation of the glans penis and prepuce is sometimes seen in elderly men from sixty to seventy. One of my cases began as a recurrent herpes, but no cause is ascertainable in most instances. The surface for a variable extent remains superficially excoriated with a sharply defined border. Even if it heals for a time, it is almost sure to break down again, either in the same or another place. Such cases are apt to degenerate into epithelioma.

Hutchinson, who has written on the subject, says it is incurable, but much may be done for it by persistently using microbicides.

A 1 in 8000 to 1 in 6000 perchlorid of mercury solution on lint may be applied, and if, after a day or two, it is beginning to irritate, wet boric lint may be substituted, returning to the

* Doyon, "De l'Herpès récidivant des parties génitales." (Paris, 1868.)

perchlorid when the irritation has subsided. In one case touching some of the obstinate spots with pure formalin at the end of a match was effectual in healing them.

Zoster Atypicus Gangrænosus et Hystericus (Kaposi). *Vide* Hysterical Gangrene.

BULLOUS ERUPTIONS.

Bullæ may occur as an occasional or constant feature in a large number of acute inflammations of the skin, in some toxic general diseases, and in some neuroses.

Thus there are bullous forms of urticaria, erythema ab igne, and erythema multiforme, but these are exceptional, while herpes iris is frequently bullous, and in impetigo contagiosa it is fairly common.

In vesicular eruptions, like eczema and herpes, bullæ may be formed by coalescence. Some drug eruptions, of which quinine may be especially mentioned, take a bullous form, and external irritants often excite bullæ or blisters, chiefly depending on the severity of the irritant. Rhus toxicodendron and primula obconica may be instanced among vegetable, cantharides among animal, and arsenic among mineral irritants.

Bullæ are an occasional feature in some of the exanthemata, such as scarlatina and varicella, and are quite common in erysipelas.

Bullæ also occur in the symptomatology of syphilis, both congenital and acquired, in the early and late stage of leprosy, and in various lesions of the nervous system, both central and peripheral.

The essentially bullous eruptions now to be considered are pompholyx, epidermolysis bullosa, pemphigus, dermatitis herpetiformis, and some other forms of hydroa, while there are a good many cases of anomalous bullous eruption which are not classifiable with our present knowledge.

POMPHOLYX.*

Deriv.—πομφόλυξ, a bubble.

Synonyms.—Cheiro-pompholyx (Hutchinson); Dysidrosis† (Tilbury Fox).

Definition.—A vesicular and bullous eruption limited to the hands and feet.

This disease was described originally by Tilbury Fox in 1875, and, independently, by Hutchinson, from the same case. I have adopted the American name, as it does not assume any pathological theory.

The disease is not a common one, and the more severe forms are rare, but I have seen a good many cases since Tilbury Fox first pointed out its characters to me.

It is a disease that is seen chiefly in the summer, and is limited almost exclusively to the hands and feet, and while symmetrical in the main, one side is often worse than the other. The hands are always affected, while the feet often escape, and are seldom so bad as the hands. The eruption commences with burning and tingling, and development of deeply imbedded vesicles, singly or in groups, along the sides of the fingers and on the palms, but no part is exempt; in bad cases the whole surface of the hands is affected. In the earliest stage I have repeatedly verified Fox's observation, that small transparent rings of fluid are visible round the sweat orifices; but this cannot be demonstrated, as they become larger, when they have been aptly compared to boiled sago grains imbedded in the skin; at the same time too much stress has been laid on this appearance, as it is due more to the anatomical constitution of this part of the skin than to any peculiarity in the process. When the vesicles are grouped they frequently coalesce into larger bullæ with irregular outlines, which project considerably

* *Literature.*—"On Dysidrosis," Tilbury Fox, *Amer. Jour. of Derm.*, 1875, p. 1.

"Cheiro-pompholyx," Hutchinson. "Illustrations Clinical Surgery," London, 1878. Vol. i., Plate X., colored.

† G. T. Jackson's dysidrosis is a different affection, described under Hidrocystoma.

above the level of the skin. The contents both of vesicles and bullæ are neutral, or alkaline, perfectly clear at first, though the older ones are turbid. When fully developed the hands are covered with vesicles and bullæ from one-sixteenth to one inch or more in diameter, with swelling and tension, but with little or no redness of the skin; in ten days or a fortnight the contents are absorbed, for the vesicles never rupture spontaneously, and the detached epidermis is exfoliated, or can be cut off, exposing the red delicate new skin, which never discharges like an eczema; this soon hardens, and the disease is well, but is very likely to recur in the following year, or later. During and before the eruption the hands are often in a condition of hyperidrosis, and it is most frequent in damp-handed persons, who are nearly always out of health at the time of attack.

The following case is a fairly typical example, and illustrates most of its features:

George T., æt. thirty-six, carpenter, came to the hospital on January 23, 1883. He first suffered from the eruption six years previously; since then he has had one or two attacks a year, all but the present one having been in the summer; it is especially likely to come on when he is out of health and living badly. The feet are sometimes affected, but never severely. In this attack both hands were involved, but the right was much the worse. There were large bullæ and vesicles on the palmar surface of the hands and fingers, and there were vesicles along the sides of the fingers, but the backs of the hands were free; the vesicles and bullæ were from one-eighth to one inch in diameter, the smaller ones rounded, the larger irregular from coalescence. No connection with the sweat ducts could be traced, but none of the vesicles were in the earliest stage. His general health was now good. He was ordered perchlorid of iron internally and oleate of zinc ointment, and in a week was sufficiently well not to attend a third time.

Variations.—Many authors include in this category the very slight cases, which are not uncommon, where there are simply a few "sago grain" vesicles along the sides of the fingers, coming on in hot weather in moist-handed persons, with or without slight derangements of health, and itching rather severely, drying and disappearing in a few days. I consider it a separate affection.

In a few cases an eruption, generally of an eczematous aspect, appears on the arms or elsewhere, and occasionally the disease, instead of getting well quickly, lasts several weeks.

Etiology.—It occurs in both sexes, but is much more common in women. Hutchinson says he has never seen it below puberty or in old persons. The youngest I have any record of was a girl of twelve (Waren Tay had a case aged nine), the oldest a woman of fifty-four. It is most common in young women of nervous temperament, is especially liable to occur when they are broken down in health from worry or excitement, or other cause of nervous depression. The above statements apply to the severe typical cases. The cases of a few vesicles along the sides of the fingers in hyperidrotic persons only require hot weather for their reproduction.

Pathology.—There has been much dispute about the pathology, chiefly as to whether it is a disease of the sweat glands, Fox affirming, Hutchinson, Breda, and Unna denying this. For my own part, on clinical as well as anatomical grounds, I think the disease is intimately connected with the sweat apparatus, but I should rather connect it with hyperidrosis than dysidrosis. Primarily, however, I think the disease is of neurotic origin, probably a vaso-motor neurosis leading to inflammation in and about the sweat apparatus, but not limited to those structures.

Anatomy.—This has been investigated by Fox * and myself conjointly, by Robinson † of New York, by myself since independently, and by W. Williams, ‡ Breda, G. and F. E. Hoggan, § etc. There is such a discrepancy between the observations that it is a question whether the same affection has always been under examination. Robinson, Williams, and Breda all affirm that the disease has nothing to do with the sweat apparatus. Breda saw a sweat duct traverse a vesicle without having any communication with it. How this could be, as the sweat ducts in the rete have no walls, is not evident. Williams also in serial sections found no connection with the sweat duct. Judging from his description, he was examining the mild cases on the sides of the fingers already described as probably a separate affection, and Breda probably did the same, as the typical form is too rare to get many cases in a short time. Unna has found a special bacillus, and claims the disease as a local

* *Pathological Transactions*, vol. xxix. (1878), p. 264.
† *Archives of Dermatology*, vol. iii., No. 4 (1877), p. 289.
‡ *Brit. Jour. Derm.*, October, 1891.
§ Hoggan, *Monatsh. f. Derm.* (1893), pp. 110 and 148.

infection, but no one accepts this view besides himself. The Hoggans and myself, while finding the sweat ducts frequently in connection with the vesicles, admit that they are not always so in all the vesicles, which may be either superpapillary or interpapillary.

Fox and I, in the first examination of the disease in an early stage, showed that many of the earliest vesicles, which are always formed in the rete, somewhat more in the upper part, were directly in the line, and interrupted the course, of the sweat duct, and in some of the coils there were signs of inflammation. Robinson, on the other hand, found the vesicles nearer the top of the rete and over the papillæ, and he could find no connection with the sweat ducts and glands. Having obtained some skin from another patient I found the following conditions, which I give in greater detail as they have not been published elsewhere.

The vesicles were always formed in the rete, generally in the upper part close to the horny layer, but sometimes in the middle, and occasionally quite low down. They could be shown to be distinctly in the line of the sweat duct sometimes, and a sweat duct could be distinctly seen leaving the vesicle, and it was, therefore, distinctly in the interpapillary part. In other parts, although there was no sweat duct in the section, the vesicle could be shown to be in the interpapillary process. On the other hand, and that, too, sometimes in the same section, some vesicles were evidently over the papillæ, and occasionally a sweat duct could be traced between the vesicles. On the whole, there were probably more vesicles over papillæ than between them. Slight proliferation of the sweat-duct cells could be seen in the upper part, and even sometimes in the lower, but in no case could I satisfy myself that the sweat coil was inflamed.

These observations apply to only the smallest vesicles; when comparatively large, they encroach upon and destroy the whole of the rete, but seldom raise up the horny layer. The papillæ near the vesicles were infiltrated with leukocytes, but not densely; leukocytes were also to be seen near the upper wall of the vessels of the papillary layer, but not near the lower, and there was seldom any sign of inflammation round the deep vessels; indeed, the main feature was that the inflammatory process was almost confined to the papillary layer, and that it was of very moderate intensity.

Diagnosis.—The most characteristic features are its limitation to the hands and feet, the tendency of the vesicles not to rupture, but to dry up, the spontaneous recovery, and the tendency to recur repeatedly, especially in the summer time. In these particulars it differs from vesicular eczema palmarum, which it otherwise closely resembles, for here when vesicles form they rupture spontaneously, and expose a weeping surface instead of a dry one as in pompholyx. The position and formation of the bullæ by the coalescence of the vesicles are enough to distinguish it from pemphigus.

Prognosis.—This is good for each attack, which will probably be well in a fortnight, but it is almost sure to recur at some time or other.

Treatment.—Internally, iron and strychnine, or quinine and iron, are generally required. Arsenic is strongly recom-

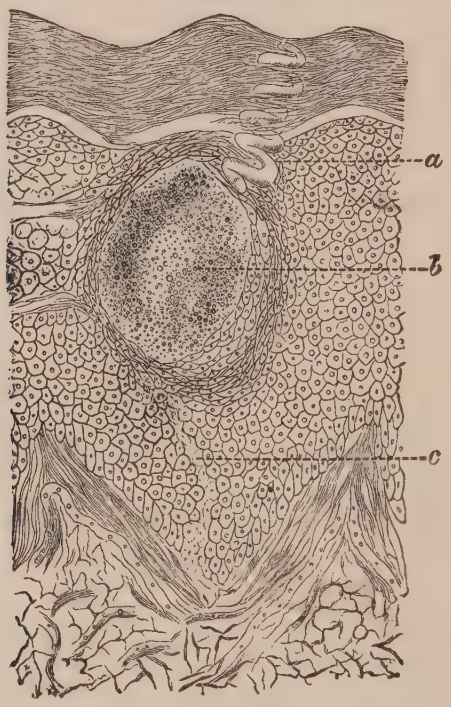


Fig. 18.—Pompholyx. × 150.
b, Vesicle formed in the interpapillary portion of the rete directly in the course of the sweat channel *a* and *c*.

mended by Robinson, but all my cases have got well quickly enough without it.

Since the patients are almost always depressed, and otherwise out of health, efforts to improve their surroundings ought to be made, the mind diverted, and change of air and scene should play an important part in the treatment, but it must be confessed that the patients, most frequently of the poor class, manage to dispense with these luxuries and get well in a short time.

Locally, one of the oleates is most suitable. Oleate of zinc or lead ointment should be spread thickly on strips of linen and closely applied, doing up each finger separately; this gives great relief to the tingling and tension, and the inflammation soon subsides, and healing follows.

For the slight cases at the sides of the fingers painting with calamin lotion two or three times a day is sufficient for the attack, and in a few troublesome cases argent. nitrat. gr. v. and sp. æth. nitrosi ℥j painted on once a day; but as it discolors the skin it should be reserved for obstinate cases. Arsenic internally, when there is frequent recurrence, is sometimes successful in stopping it, and perhaps this is the class of case in which Robinson used it.

EPIDERMOLYSIS BULLOSA HEREDITARIA, OR CONGENITAL TRAUMATIC PEMPHIGUS.*

Tilbury Fox described two cases in 1879, but Goldscheider's case in 1882 was more clearly differentiated. The children are born with a liability to the formation of bullæ after the smallest physical provocation. The excessive vulnerability shows itself in the first month of life, and is said to improve at from forty to fifty and cease in old age, but Augagneur's case had it still at sixty-four, and Hallopeau's at fifty-five. It is strongly hereditary, often through several generations (five in Bonaiuto's case); it shows also a family prevalence, and is rather more frequent in males than females. The slightest injury, blows, pressure, friction, or scratching, is followed by the formation of a bulla, sometimes preceded by intense itching and redness. The bullæ are often hemorrhagic and of large size, two inches across or more, and their shape may be irregular from the nature of the injury instead of round or oval. Al-

* I. Wallace Beatty, *Brit. Jour. Derm.*, vol. ix. (1897), p. 301, gives an excellent historical *résumé* to date.

II. Abs. of Bonaiuto's comprehensive paper, with *résumé* of forty-eight cases, in *Brit. Jour. Derm.*, vol. v. (1894), p. 317; other abs. vol. ix., xi., and xii.

III. Hallopeau, *Annales de Derm.*, vol. ix. (1898), p. 721, with many references. He subdivides the cases into a simple, a dystrophic, and an attenuated form.

though the bullæ appear to be quite superficial, either from repetition in the same place, and possibly sometimes from secondary pus infection, they frequently leave atrophic or even thickened scars; and milium, as in other forms of pemphigus, has been repeatedly observed (Hallopeau, Beatty, Colcott Fox, etc.).

The parts most exposed to injury, the hands, feet, and bony prominences (*e. g.*, elbows and knees), are the favorite sites for the bullæ and their scars; at the same time, bullæ come out apart from injury, and from no ascertainable cause, even in the mouth. The fingers and the nails are very often deformed or altogether destroyed, but I have seen them unaffected.

It was associated with ichythyosis in a case of Startin's and in one of my own. Atrophic * changes, even where there have been no bullæ, such as thinning and lentiginous pigmentation, are sometimes seen. In adults, with ordinary pemphigus, injury will sometimes determine the development of a bulla, and in a case under Colcott Fox,† a woman of fifty-one, after having had pemphigus for nine years, she ceased to have acute outbreaks, but acquired the same vulnerability as the congenital cases, both in the skin and mucous membranes.

Pathology.—This is obscure. There is probably an excessive irritability of the vaso-motor nerves analogous to that of urticaria factitia. It is uninfluenced by arsenic. Elliot ‡ excised a bulla, and showed that there is a raising up of the greater part of the rete, but Bonaiuto stated that the bleb occupied the horny layer, and did not affect the rete, but the tendency to scar shows that this must be exceptional. Bettmann found that the whole epidermis was not lifted up. Elliot's further observations showed that in apparently normal skin of such patients there were degenerative changes in the rete just above the basal layer. He considers that it is not a real disease, but a cutaneous condition with increased vascular irritability. The evidence as to eosinophiles in the bullæ is conflicting.

* *Vide* Bettmann's cases, *Archiv. f. Derm. u. Syph.*, vol. lv. (1901), p. 323. Three red-haired brothers all began at twelve years of age, just after revaccination. They all suffered from epistaxis and lentiginous pigmentation, with atrophic changes on the backs of the hands.

† *Brit. Jour. Derm.*, vol. ix. (1897), p. 341.

‡ *Jour. Cut. and Gen.-Ur. Dis.*, January, 1895, and *N. Y. Med. Jour.*, April 21 and 28, 1900. Abs. *Brit. Jour. Derm.*, vol. xii. (1900), p. 256.

Diagnosis.—Hallopeau * describes cases of what he calls "congenital bullous dermatitis with epidermic cysts," of which also Vidal and Besnier have had examples, and thinks they are different from epidermolysis bullosa because of (1) The inflammatory character of the eruption; (2) the predilection for the dorsal surface of the articulations; (3) the non-affection of the palms and soles; (4) the cutaneous atrophy, the permanent cicatrices, and the loss of the nails; (5) the epidermic cysts; (6) the bullæ may develop without apparent traumatism; and (7) the acute outbreaks following nerve distribution areas. Except the last I have seen all the above distinctions broken through in different cases, and do not, therefore, regard Hallopeau's cases as really distinct.

PEMPHIGUS.

Deriv.—πέμφιξ, a blister.

Synonyms.—Pompholyx; *Fr.*, Pemphigus; *Ger.*, Blasenausschlag; Pemphigus.

Definition.—An acute or chronic eruption characterized by the formation of bullæ in successive crops, usually without antecedent lesions.

The disease is a rare one, occurring about once in 500 cases of skin disease in England and America. Kaposi's statistics of over 44,000 cases give 1 in 210; but he includes some bullous eruptions not classed under pemphigus by English writers. My own statistics, taking pemphigus and dermatitis herpetiformis together, give 4.4 per 1000.

Before describing what pemphigus is it will clear the ground to briefly state what the affections are which either have or had the name of pemphigus, but no longer enter into the modern conception of the disease.

In former times, when the objective lesion was the sole ground for diagnosis, many symptomatic or other bullous eruptions were classed as pemphigus. Thus **P. Leprosus and P. Syphiliticus** are the bullous eruptions of leprosy and syphilis, and are described under their appropriate heads.

* Hallopeau, *Annales de Derm.*, vol. vii. (1896), April No., and also p. 453.

P. neonatorum is now known to be a pus cocci affection, and **pemphigus contagiosus** and **P. contagiosus tropicus** are of similar if not identical origin. (*Vide* Pus Cocci Diseases.)

Congenital pemphigus is described under Epidermolysis bullosa.

P. neuroticus, although not considered a true pemphigus, is a convenient term for the various outbreaks of bullæ which occur in the course of certain diseases after injuries, most of which are connected distinctly with irritative or paralytic nerve conditions, the irritative being the more important. Although many instances of associated cerebral disease with bullous eruptions are on record,* I am not aware of any uncomplicated with cord disease; *e. g.*, bullous eruptions on the lower extremities are frequent in general paralytics, in whom posterior sclerosis of the cord is also very common.

Déjerine records a case in which, twelve days before death, pemphigus broke out on the extremities, and post-mortem there were diffuse periencephalitis, sclerosis of the lateral columns, and degeneration of the peripheral ends of the nerves under the bullæ. In locomotor ataxy bullous eruptions are not infrequent, and in three well-marked cases sclerosis of the columns of Goll was the principal change found post-mortem, where during life there had been extensive bullous eruptions. Bullous eruptions are fairly common with chronic myelitis and acute spinal meningitis. Balmer † gives three instances in which pemphigus occurred in progressive muscular atrophy, but there is no proof that the lesion in the cord was limited to the anterior cornua. Mitchell gives several instances of bullous eruptions following nerve injuries, those setting up neuritis being chiefly to blame; where the nerve is completely paralyzed bullæ occasionally form after exposure to heat or cold, or the like, and the early and late bullous eruptions of leprosy afford examples of disease of the nerve, producing similar effects.

* Leloir, *loc. cit.* Two recorded by Schwimmer, in his "Die neuropathischen Dermatonosen," cases 13 and 14, p. 148 *et seq.*; case 12 is also interesting; one by Meyer of Strasburg, in Virchow's *Archiv.*, November 5, 1883; full abstract in *Brain*, January, 1885.

† Balmer, *Archiv. für Heilkunde*, 1875, p. 317.

Déjerine, Quinquaud, Leloir, Jarisch, and Mott * found degeneration of the peripheral nerve ends in five cases of pemphigus, but in all there were central changes as well. Again, Mott and Wright † found lesions in the small cutaneous branches of the anterior crural nerve, and in its spinal ganglia in a case of general paralysis with a gangrenous bullous eruption. Still the evidence goes to show that bullous eruptions may occur in connection with, and probably indirectly due to, lesions of the nervous system situated anywhere from the center to the periphery of the sensory tract, though similar lesions are much more frequently found with no bullæ; and that irritative lesions have much more effect than paralytic ons in their production, an external excitant being necessary in paralytic lesions, in which also the bullæ are solitary or few in number.‡

P. hystericus is a variety of P. neuroticus in which nerve lesions are usually not demonstrable. It is a rare bullous tropho-neurosis in which the distinction from a true pemphigus is not always easy to make, except from the kind of patient in whom it is met with.

From time to time these cases are reported in women, mostly young, and pronounced hysterics, and as a rule the outbreaks follow or alternate with other recognizably hysterical phenomena; but in some cases these latter may be wanting in relation to the bullæ, although the neurotic temperament of the patient is evident enough. In a patient of Du Mesnil de Rochemont,§ who had annual attacks from the age of seven, when æt. twenty-nine simple verbal suggestion would bring out typical bullæ in another, and the hysteria went on to mania and dementia. Other vaso-motor disturbances are often present, such as tachycardia and redness and burning of the skin before the bullæ appear.

* In a case of Sangster's read before Med. Chir. Soc., *Brit. Med. Jour.*, June 16, 1888.

† *Archives of Neurology*, vol. i. (1899), and *Brit. Jour. Derm.*, vol. xii. (1900), p. 29.

‡ *Archiv. f. Derm. u. Syph.*, vol. xxx. (1895), p. 103. Good abs. in *Annales*, vol. vi. (1895), p. 842.

§ *Archiv. f. Derm. u. Syph.*, vol. xxx. (1895), p. 163. Good abs. in *Annales*, vol. vi. (1895), p. 842.

In Boradet's case, a pronounced hysteric of seventeen, successive bullous outbreaks appeared for months on the hands, forearms, forehead, and cheeks, which began as red lymphangitic plaques on which vesicles formed and coalesced into bullæ. These dried into crusts and shelled off in a week without leaving any scar or mark. This is the rule, but sometimes they become suppurating and even gangrenous sores, and more or less scarring and even keloid will then result, as in the case of Neuberger,* an hysteric of twenty-six, who had scars and keloids from a previous attack. A month after she came into his clinic numerous blebs came over the right breast and clavicle. They kept on recurring, and then spread to the left breast and arm. The bullæ were clear yellow, and had a pale red wheal-like margin. After some days they dried into easily detachable yellowish-green crusts, beneath which were suppurating fetid ulcers. As they slowly ciatrized, keloids developed. Instead of blebs, necrotic areas, as if the skin had been cauterized, sometimes appeared. The eruption recurred persistently, affected the mouth and vulva, and fugitive erythema often came on the face. The patient emaciated and died in three months from the onset. There were no peripheral nerve changes, but syringomyelia was found, of which there were no diagnostic symptoms during life. He compares his case with Doutrelepont's well-known case (*vide* Hysterical Gangrene), and with Kaposi's zoster gangrænosus.

Pemphigus Virginum, or Pemphigus of girls (Hardy), **Pemphigus Chloroticus** (Tommasoli).† Hardy described a vesiculo-bullous eruption in young and generally chlorotic girls in which the bullæ developed on elongated or oval red plaques of one to three centimeters. The vesicles soon burst and dry into a thin yellowish crust. They may be very numerous and cover a whole limb. The affection, by a succession of fresh lesions, may last for several months, and Tommasoli regards it as quite different from P. hystericus and considers it due to an auto-toxin.

* *Transactions Germ. Derm. Soc. at Leipsic*, 1891. Abs. *Brit. Jour. Derm.*, vol. vi. (1893), p. 60.

† "Du Pemphigus des jeunes filles et du P. hystericus," Tommasoli, *Jour. Maladies Cutanées*, vol. vi. (1895), p. 449.

There only remain four definite main varieties: pemphigus acutus; pemphigus chronicus seu vulgaris; pemphigus foliaceus, which is always chronic; and pemphigus vegetans. A few minor varieties will also be noticed.

Acute Pemphigus is much rarer than the chronic form, and Hebra even denied its existence; but though, doubtless, cases have been called acute pemphigus in which the bullæ were merely an accidental feature, as in bullous erythema, varicella bullosa, etc., there are other cases which run their course in from one to six weeks, often with a fatal termination, and are universally regarded as pemphigus; though etiologically they are probably separate affections.

Pernet,* in publishing a fatal case observed by him in my clinic, collected sixteen other cases (eight fatal), and found that, while three were due to bites of animals, the others occurred either in butchers (eight) or those whose occupations rendered them liable to animal septic poisons, and in many of them a distinct history of a wound was obtained. In several the first bulla was at the wound and was mistaken for a whitlow. In a considerable number of cases the temperature has been over 104° and with shivering nausea and other febrile symptoms. In these cases bullæ from a pea to a hen's egg in size, and many of them hemorrhagic, come out by the score every day, and affect the tongue, mouth, eyelids, and other mucous orifices. There is often very extensive denudation of the epidermis from coalescence of the crowded bullæ, especially at the flexures and points of pressure, and the stench of the sodden decaying epidermis is almost insupportable. In the worst cases the patient becomes delirious and dies in a typhoid state in from one to three weeks, often with albuminuria, as in Senfleben and Duckworth's † cases; the latter died in nine days, one-sixth of the whole body surface being affected. The prognosis is largely determined by the acuteness of development of the bullæ, and the extent of body surface involved.

Even where recovery takes place, as in Southey's ‡ case, æt

* "Acute Pemphigus," by G. Pernet and W. Bulloch. *Brit. Jour. Derm.*, vol. viii., May, 1896, p. 157, with full references and bacteriology

† *St. Bart.'s Hosp. Rep.*, vol. xx. (1884), p. 41.

‡ *Clin. Soc. Trans.*, vol. viii., p. 179.

nineteen, and Payne's,* æt. seventy, the patient was brought to death's door. Allen's † case, though acute in development, only affected the upper part of the body, and that not severely; it was preceded by itching, chilliness, nausea, malaise, and was, as usual, accompanied by fever.

Acute pemphigus in children is much more common, often less severe, and probably of different etiology. Diarrhea, sickness, and fever are usual antecedents and concomitants; its danger is measured by the extent of skin involved in a short time; it has supervened after the exanthemata, such as scarlatina and measles.

Bulloch examined the fluid of an unruptured bulla both in Pernet's and Hadley's case, and found a diplococcus rather larger than the gonococcus. It appears to be the same organism as that described by Demme and Bleibtreu in their cases, and is probably the pathogenic organism.

P. Chronicus (the specific title "vulgaris" is generally dropped) is the usual form. In a typical case hemispherical or oval bullæ, with tense walls and translucent contents, develop bilaterally, and to some extent symmetrically, upon almost any part of the body; but they are generally most abundant upon the lower part of the face and trunk, and on the limbs. They come out in crops at intervals of a few days, scattered singly, or irregularly grouped, vary in number from two or three to several scores, and are vesicular from the first, though there may be slight punctiform vascularity of the surface, preceding the pin's-head-sized vesicle, which, rapidly enlarging, attains its full size in a few hours. The majority are from a quarter to one inch in diameter, but the extremes are from an eighth to two or three inches in their greatest diameter. The largest are generally formed by coalescence with neighboring bullæ, and are therefore irregular in outline. The bulla projects abruptly and prominently above the normal skin,

* *St. Thomas's Hosp. Rep.*, vol. xii.

† *Jour. Cut. and Gen.-Ur. Dis.*, vol. vi. (1888), p. 121, with colored plate and reference to two other cases.

Hallopeau and Lévi publish the case of a butcher, æt. sixty, who recovered. Bullæ ceased to come out after the second week. *Annales de Derm.*, vol. viii. (1897), p. 61.

forming an oval or roundish tense-walled bleb, the fluid in which is at first perfectly clear, and there is no areola; but the contents soon become turbid from the increased number of leukocytes, and a narrow red areola forms as the purulent character increases. The effused fluid is soon absorbed, leaving only a thin scab on its site, formed by the dried cover of the bulla, or, if the latter ruptures, a superficial excoriation may ensue, and when this has healed, or when the scab falls off, a red stain is left, which after a time may become pigmented. The duration of each bulla is a matter of a few days; but the disease as a whole, by the formation of fresh crops, lasts from six weeks to as many months, the fresh bullæ eventually becoming fewer and smaller. Though there may be only one attack, as a rule the disease recurs several times at intervals of a few months or a year, and then ceases altogether.

General Symptoms.—In a well-marked case, especially in children and old people, the eruption may be preceded by chilliness, nausea, and even vomiting, pyrexia amounting to a rise of two or three degrees, and other febrile symptoms, which often recur with each fresh crop of eruption; and when the excoriated surface is large, and the bullæ numerous and come out at short intervals, there may be severe prostration from the sleeplessness, pyrexia, and anorexia, and even death may occur in acute cases, within two or three weeks from the onset of the eruption. On the other hand, in most adults, and where the bullæ are few and in moderate numbers, there may be little or no constitutional disturbance, but only local subjective symptoms, such as a feeling of heat or tension. Where the bullæ are most abundant and crowded, or if the pus is confined by the crusts, the lymphatics and glands of the neighborhood become inflamed, but there is only actual pain and smarting when the corium has been exposed by the too rough removal of the crusts, by scratching or otherwise.

Variations.—Great differences are produced in the clinical aspect of pemphigus, owing to the variation in number, size, and contents of the bullæ, the condition of the skin beneath their covering, the intervals between the evolution of the crops or of the disease as a whole, and the constitutional or subjective symptoms.

In rare instances the disease may be in a sense local. One

or two large bullæ appear at a time, erratically as regards their position, but with rather a tendency to appear where the circulation is feeble, such as on the toes, fingers, or nose, or on the ankle or wrist, local venous congestion sometimes preceding the bullæ. This is spoken of as **P. solitarius** or **localis,** and is seen chiefly in the aged and debilitated. I have, however, seen it on the legs only of a young woman and on a man of fifty-four.

In a few cases I have seen it limited to the face and back of the hands. In one, a boy of four, a bulla formed under each nail, detaching it from its bed, except at the base. Pick* records a case of an hysterical woman in whom it was unilateral, the whole right side being affected; and H. Neumann of Potsdam records the case of a boy of nine in which bullæ and purpuric lesions were on the left side only, following diphtheria, measles, and severe otitis media, and preceding subacute suppurative polymyositis.

When they appear in continuous crops and in enormous numbers it is **P. diutinus.** In this form scarcely a part of the body is free from eruption, and life is endangered.

Willan, Hebra, and Kaposi use the same term for cases where the relapses follow closely or even almost continuously on each other, instead of at the usual intervals of a year or so. Again, it has been used for cases where the bullæ continue to appear for many years, or even for the whole life, but only one or a very few at a time. Obviously, it is best to drop altogether the use of a term the meaning of which varies according to the view of the individual who employs it.

The contents may be purulent at an early stage, or yellow lymph may form on the base **(P. diphtheriticus),** or the inflammatory process may be still more intense and superficial, or a deep slough may form **(P. gangrænosus)**—this generally occurs in children only, and will be again alluded to; or there may be hemorrhage into the bullæ, varying in amount from enough to impart a mere pink tint to the serum, up to black **(P. hæmorrhagicus,** or **purpura bullosa).**†

*Quoted *Arch. Derm.*, vol. vi., p. 283, from *Wien. med. Presse*, 1880, p. 183.

†In 1898 a male infant, æt. one month, was brought to the U. C. H. The eruption began four days after birth with two spots on the chest, and

In **P. Pruriginosus,** as the name indicates, severe itching is the prominent symptom, and the consequent scratching produces, as usual, considerable modifications in the eruption; the contents of the bullæ soon become purulent; after a time wheals appear, and the bullæ sometimes develop on the wheals.

When the itching is very intense the bullæ frequently abort, the earliest vesicles being torn open by the nails before they can develop fully. When the disease has lasted for years the other phenomena of the long-scratched skin are evolved, such as eczema, ecthyma, or impetigo contagiosa, pigmentation diffuse or in streaks or spots, and thickening with dryness of the skin. The loss of sleep and the constant worry produce considerable nervous depression, and may even wear the patient out; and all the severe forms may have a fatal issue, either directly from exhaustion, or indirectly from intercurrent disease, to which the vital exhaustion renders them vulnerable. These severe forms have therefore been classed by some authors as forms of P. malignus, as opposed to the typical P. vulgaris, which has been called P. benignus, but these terms are superfluous. The P. pruriginosus of Hardy is the affection described under Dermatitis Herpetiformis, while Hebra and Kaposi call it **P. hystericus.** Many modern authors consider that all cases of pemphigus with extreme itching are referable to dermatitis herpetiformis; but, while this is true for many of the older cases, I am convinced there is a residue which is distinct from dermatitis herpetiformis, and really belongs to pemphigus.

had been coming out ever since. None of them had quite gone, as they broke and filled again, discharging blood. All regions, including the palms and soles, were involved, but not the finger-ends, but there had been some lesions in the mouth. They were vesicular, from a millet to a pea in size, of a bright mulberry to a dark purple hue, and they stood out conspicuously from there being a zone of pale skin round them. The child was well nourished and not cachectic-looking, but it died a few days after admission, and the right pleura was found to be full of pus, with small abscesses in the liver and infarcts in the spleen. Nothing to show how the septic condition arose; the parents were not poor, and the hygienic surroundings were good.

A well-marked case in an adult came to me with large hemorrhagic bullæ on the soles, a few days before his death from chronic alcoholism, albuminuria, and hypertrophic cirrhosis of the liver.

Pemphigus circinatus cases have been described by various observers, but they differ considerably in their features. C. W. Allen * of New York recorded a case in a woman, æt. forty-five, in whom bullæ arose from the center of a well-defined circinate erythematous base which was much larger than the bulla. In some of them vesicles developed on the circinate border, either discrete or confluent. In some places extensive denuded patches, more or less crusted over, were formed by coalescence of many bullæ. Some of the bullæ arose independently of the erythema. Penrose and myself have met with very similar cases in children. In my case the skin was covered with abruptly margined erythematous rings, with a bulla in the center, which pulsated, growing paler and then brighter with each heart-beat. Some lesions presented vesicles in a ring on the periphery of a red patch, but both cases were different to any case of dermatitis herpetiformis; and the mother said the rings were the sequel of the bullæ, but the appearance of bullæ in the center and periphery of the ringed patch was against this.

Some of the cases published as circinate pemphigus are really the vesicular form of erythema iris, and some are, no doubt, cases of dermatitis herpetiformis.

The following is, as far as I know, a unique circinate form. A lady, æt. forty, who had had two previous attacks in eighteen months, began another with bullæ of the ordinary pemphigus type, which was controlled by salicin. About a fortnight after leaving off the medicine a fresh outbreak occurred resembling the two previous attacks. The whole of the back, the upper segments of the limbs, and to a less extent the rest of the body, were covered with circles from a half to two inches in diameter, while larger gyrate areas were formed by several rings uniting. The border was at first one-sixteenth of an inch, and later increased to one-fourth and one-third of an inch, surmounted by a vesicular portion which formed a continuous ring, and was not made up of separate coalesced vesicles. Each circle began as a pin's head or smaller vesicle, on a red very slightly raised base, and then spread peripherally. Very severe itching, coming on in paroxysms, accompanied the eruption.† The pa-

* *Jour. Cut. and Gen.-Ur. Dis.*, vol. viii. (1890), p. 471.

† Compare this case with those of Hallopeau's dermatitis herpetiformis en cocardes, Plate X., St. Louis Atlas, and Liddell and Wende's cases.

tient was a delicate woman who had suffered from endometritis.

Pemphigus of Mucous Membranes. All forms of pemphigus may attack the mucous membrane of the mouth, and less frequently that of other cavities, pharynx, larynx, nose, stomach, and eye. It is a striking feature of P. vegetans. There is a special form in which the mucous membranes are either exclusively involved or the skin lesions are comparatively trivial. Owing to the adhesions of the adjacent raw surfaces its local effects may be very serious; thus, in the conjunctiva it leads to adhesion of the ocular and palpebral conjunctiva, which von Graefe called "essential shrinking of the conjunctiva." * Whether this is due to pemphigus only is a disputed point. It has occurred at all ages from fourteen months to seventy-six years; some have, and some have not, had bullæ on the skin. I have seen several cases, one in a German gentleman who had in addition pemphigus of the palate and pharynx; it led to adhesions closing the posterior nares and producing loss of smell and taste; the laryngeal and nasal mucous membranes were also involved, and he sometimes had bullæ on the skin. The disease had been going on for years.† He eventually got well, apparently from the administration for a long period of small doses of arsenic. Large doses exerted no influence.

Charters Symonds reports similar general involvement of mucous membranes, but the skin was free.‡

Many cases are uninfluenced by treatment, and ultimately lead to the death of the patient from marasmus; in a few general pemphigus has supervened, while a case under Colcott Fox commenced as a general pemphigus, and the conjunctivæ were not attacked for some years.

Complications and Sequelæ.—Great thickening of the horny layer of the palms and soles (keratosis or tylosis) is occasionally

*M. Morris and L. Roberts published a case, with colored plate and general summary and bibliography to date, in *Brit. Jour. Derm.*, vol. i. (1889), p. 175. Also Ed. Pergens' "Pemphigus des Auges, 1901," with analysis and full bibliography to date.

† D., p. 251, private notes. The skin lesions are depicted in my Atlas, Plate XII., Figs. 2 and 3. They are quite small, but when they first appeared were the size of a hazelnut.

‡ *Clin. Soc. Trans.*, vol. xxiii , 1890.

seen in pemphigus, as in a case of P. pruriginosus related by myself (see Keratosis Palmæ), by Besnier and by Quinquaud in a P. foliaceus, and also by Besnier and Brocq in dermatitis herpetiformis.* The possibility of the hyperkeratosis being due to arsenic must always be borne in mind, as it has nearly always been given in these bullous eruptions, but Besnier has seen it when no arsenic had been given.

Groups of milium-like nodules, really solid epidermic cysts, are sometimes produced on the site of the bullæ, but I do not believe, as some do, that they ever come before the bullæ. I have seen, in what was otherwise an ordinary pemphigus, convex † erythematous swellings left after the drying up of the bullæ.

Pemphigus Foliaceus ‡ differs so much from the other forms that if it was not that P. vulgaris sometimes lapses into this condition it would appear to be a separate disease. It was first described by Cazenave in 1844. It is very rare, occurring about once in five thousand cases of skin disease, and six cases (five women and one man) have come under my notice. It is one of the few kinds of dermatitis which have a universal distribution, and is characterized by the formation of flaccid bullæ, which speedily rupture and discharge their opaque contents, leaving an inflamed, excoriated, and fissured surface behind.

The disease may be primary, the bullæ showing the P. foliaceus characteristics from the first, or they may develop from what appears to be an ordinary, though perhaps severe, chronic pemphigus, the bullæ changing their character. It has also developed from a dermatitis herpetiformis (Hallopeau) and a general exfoliative dermatitis of Wilson (Pringle, Mracek, etc.).

Symptoms.—The bullæ are quite flaccid, the fluid only just raising the epidermis irregularly in circumscribed patches from

* Brocq thought my case was a dermatitis herpetiformis, because the patient had red patches on the trunk when first seen; but these marked the site of former bullæ, and were not the erythema characteristic of D. herpetiformis. It is reported in *Brit. Jour. Derm.*, vol. iii. (1891), p. 170, and at Figs. 3 and 4, Plate XLIV., of my Atlas.

† Mary S., æt. forty-four, U. C. H. I once saw an unruptured bulla on the edge of her tongue.

‡ Author's Atlas, Plate XVIII.; Sydenham Society's Atlas, Plate XLVII.

the subjacent parts, or, if the amount of fluid is somewhat greater, it bags into the lower part of the bulla. The contents are turbid almost from the first, and soon become distinctly purulent. The bulla soon ruptures by the extension of the peripheral detachment of the epidermis, but instead of drying up the corium remains moist and exposed between the bulla coverings, which, except at the edges, are adherent, but easily detachable, and the under-surface is moistened with sero-pus and an evil-smelling serum, which gives a faint nauseous odor to the whole room.

The epidermis splits into variously sized lamellæ, and the separation of these flabby crusts from each other leaves an interval of red corium, which exudes like an eczema, and imparts an irregularly tesselated appearance to the affected surface. At first only a few square inches are attacked, but gradually the disease spreads, until in the course of weeks, months, or years, the whole body surface is affected, and there is literally not a sound spot anywhere, though bullæ seldom form on the palms or soles, the skin there being thickened, brittle, and easily fissured. The mucous membrane of the mouth and throat may be denuded of epithelium in patches, and the nails are thin, curved laterally and longitudinally, much furrowed transversely, and may be thrown off. The hair falls out, leaving only thin, small tufts; the eyelids become ectropic; and emaciation is extreme in some cases. When the disease is universal the aspect varies in different parts; where the exudation * is great, relatively thick flat crusts are formed, partly epithelial, partly from dried exudation; and when thrown off in large patches, the red weeping surface looks like an eczema rubrum. A general papillomatosis was observed by Besnier. Where there is less exudation the crusts are thin and epidermal, separable into their component lamellæ, and of a dirty buff color.

Nikolsky pointed out that there was a diminution of the adhesion between the horny and deeper layers of the epidermis, and Dubreuilh considers that this sign is present in the whole of the pemphigus group. Naserow asserts that this disunion of the stratum corneum from the stratum lucidum exists over

* Hallopeau describes a case of this kind as a new variety, but the form has been recognized for a long time and was described in a previous edition. Hallopeau, *Annales de Derm.*, vol. ii. (1901), p. 1094.

the whole skin even where there are no bullæ, and considers it diagnostic of P. foliaceus. In an advanced case the formation of the bullæ is only to be observed by daily watching, as they form either where the corium has skinned over temporarily or underneath the thin crusts, and rupture in a few hours.

There is a feeling of stiffness and tension of the skin where the epidermis has dried. There is not much itching as a rule, but it is sometimes severe and paroxysmal, and considerable smarting and soreness, owing to the movements of the patient rubbing off the loose crusts, or splitting the skin and exposing the corium afresh to the air.

After the disease has lasted for a considerable time some have febrile symptoms, either intermittent or continuous, but usually the temperature is normal, and may continue so throughout. This was so in two of my cases, one of seven and a half, the other of two years' duration, in which the temperature while under observation never rose above 100° F. until fatal pneumonia set in. The disease is often of many years' duration, and the general health may be good at first, but ultimately it breaks down. The patient wastes, is greatly prostrated, sinks into a typhoid state with low delirium, or falls an easy prey to some intercurrent malady, most frequently of the chest * or kidneys. It runs its course, however, with exacerbations and remissions. During the latter some parts of the skin heal up entirely, and there may be general improvement, deluding both doctor and patient sometimes into the hope of a recovery, which is soon dispelled by a fresh outbreak of bullæ.

In one of my cases, a woman aged thirty-nine, some of the remissions lasted two or three weeks, but they were seldom complete. In this case a severe cold preceded an extensive outbreak of ordinary pemphigus, which lasted over two years. Then she had "a severe influenza," and the bullæ came out more extensively than ever and assumed the character of P. foliaceus; her health then broke down, and she felt so ill that she had to give up her employment. The rash was always worse at the catamenial period, which had ceased two years before admission.

* In Martha W., æt. thirty-two (P. M.), there was double pneumonia, pleurisy, and pericarditis. No visible nervous changes in the cord, medulla, or brain, either macro- or microscopically.

The examination of the urine for twenty-three consecutive days was made by Dr. Halliburton, then my clinical clerk, and gave the following results. The daily average quantity of urine was 868 c. c. (31 ounces), the average quantity of urea 12.14 grams (187 grains), ranging from 8.58 to 14.98 grams, and the quantity of phosphates was 1.966 grams (30 grains). The diet was kept as uniform as possible. The great diminution in urea was partly due, no doubt, to her being at absolute rest in bed. Her weight was 129 pounds.

In a case of Hallopeau's * of eight years' duration, in whom osteomalacia developed, there was half the normal quantity of urea, three times more than the mean normal of phosphates, and five times more than the normal of phosphate of lime.

I am not aware of any typical case occurring in childhood, Vincent Hall's † case being of a different character. A boy of eleven years was suddenly seized with redness and swelling of the face, then bullæ appeared and in two days covered the face, which became a mass of scabs. This was followed by their development over the whole body surface, and within a few days the skin exfoliated in masses four to six inches square at the rate of a dustpanful a day. Although delirious for a few days he had a ravenous appetite for solid food, and was quite well in twenty-eight days from the onset. Although there were bullæ and exfoliation enough, this was not true P. foliaceus. So, too, in Hellier's case ‡ of an apparently healthy new-born infant, in whom on the eleventh day redness of the skin was followed on the next with large flaccid bullæ with serous contents. They rapidly extended over the trunk with extensive denudation of the surface, and the child died on the fourth day of disease. It was probably only a severe P. neonatorum.

Etiology.—Very little is known on this head. That chills have a distinct influence in some instances in the production of P. foliaceus is pretty generally acknowledged, and I have already given an example of such a circumstance. Schwim-

* *Annales de Derm.*, etc., vol. xi. (1898), p. 979.

† A case of pemphigus foliaceus, recovery. *Brit. Med. Jour.*, July 11, 1896.

‡ Pemphigus foliaceus in the newborn. *Brit. Jour. Derm.*, vol. xi. (1899), p. 18.

mer also gives a well-marked case of it, and there are many others on record. It has already been pointed out that some cases of persistent P. vulgaris, dermatitis herpetiformis, pityriasis rubra, and other forms of dermatitis, lapse into P. foliaceus.

Violent mental emotion immediately preceded a case under Hallopeau.

Du Mesnil de Rochemont * records a case clearly traceable to a thorn in the thumb producing a whitlow and lymphangitis wtih multiple suppurations along the limb. Shortly after pemphigus developed, and was limited to the same limb; then red spots gradually spread over the whole body, and after some time pemphigus foliaceus was fully and typically established.

The *Histology of P. foliaceus* has been investigated by Unna, Nikolsky, Leredde, etc., with general agreement. There is great elongation of the papillæ and interpapillary cones, and the rete over the papillæ is much thinner. The epithelial cells in the hypertrophied cones are swollen, softened, and edematous, and the spaces between them are enlarged and contain numerous migratory cells. There is great blood and lymphatic vascular dilatation; the connective tissue is swollen, and there are abundant migratory cells all through the derm and hypoderm.

In the blood Leredde found, in two cases, diminution of red corpuscles, increase and alterations of white corpuscles, diminution of hemoglobin, and considerable increase of eosinophile cells.

These blood changes are similar to those in P. vegetans and dermatitis herpetiformis, and bring all these diseases into line, Leredde thinks, and he calls them "hématodermites"—*i. e.*, blood diseases, to which the cutaneous lesions are secondary. He thinks that various toxins act on the bone marrow which charge the blood serum with substances which excite the skin lesions. He discusses and rejects Neusser's theory that the skin changes determine the formation of eosinophile elements in the skin, whence they are absorbed into the blood, and that of Ehrlich and Lazarus, that the skin lesions produce a chemiotactic substance which irritates the bone marrow and so produces eosinophilia.

Diagnosis.—P. foliaceus has to be distinguished from other forms of universal dermatitis, such as general eczema, pityriasis rubra, lichen acuminatus universalis.

It resembles a general *eczema rubrum* very closely, but in P. foliaceus the crusts are mainly epithelial and of large size, while in eczema they are chiefly composed of dried exudation and not often large. Although the exudation may be continuous, it is much less than in eczema of corresponding severity. Moreover,

* *Arch. f. Derm. u. Syph.*, vol. xxx. (1895), p. 103. Good abs. in *Annales*, vol. vi. (1895), p. 142.

a universal distribution of eczema is extremely rare, while it is the rule in P. foliaceus, if it has lasted long. Whenever, therefore, what appears to be a universal eczema is present, the probability of its being P. foliaceus should be borne in mind, and daily observation will soon establish the presence or absence of the characteristic large flaccid bullæ of the P. foliaceus eruption, and all doubt is then set at rest. The existence of the bullæ and the presence of discharge will prevent confusion with *pityriasis rubra or lichen acuminatus*, which are both dry diseases, though the resemblance is great in certain parts when the bullæ have temporarily ceased to be evolved, but in pityriasis rubra the scales are thin and papery, while in P. foliaceus they are comparatively thick. In *lichen acuminatus* there is great thickening of the skin and moderate scaliness, and the characteristic papules are always to be found in some part or other. *P. vegetans* differs from P. foliaceus in the ulceration, the papillary hypertrophy, the mouth affection, and the absence of universality.

The prognosis and treatment are given with those of other forms.

Pemphigus Vegetans.* Neumann † was the first in 1886 to identify the disease as a form of pemphigus, but the affection had been previously described by Kaposi ‡ in 1869 and again in 1873 as syphilis vegetans, while Auspitz, also in 1869, described two cases as herpes vegetans. I met with a typical instance in 1887, then the only one in England recognized as belonging to this category, though Hutchinson appears to have seen several cases before this, but was unaware that it had been already described by German observers. Some of Hutchinson's were of a mild type, the mouth being chiefly affected, and the skin only a very little. These recovered under treatment, and it is open to discussion as to whether they were really cases of P. vegetans. Three typical cases have come under my notice since 1887,§ one through the kindness of Mr. Hutchin-

* Author's Atlas, Plate XIX.

† *Viertelj. f. Derm. u. Syph.*, vol. xii., 1886, with plates and references.

‡ *Die Syphilis der Haut*, 1873, Plates LXIII. and LXIV.

§ Published in *Med. Chir. Trans.*, vol. lxxii. (1889), p. 233, with bibliography up to date. Since then cases have been published by Haslund of Copenhagen, in Danish; by Müller of Hamburg, two cases, *Monatsh.*

son. This patient had been under Köbner in 1890. He had suffered from sore mouth since 1885, and bullæ first appeared in October, 1890. Köbner scraped and cauterized the growths in the inguinal regions, applied tincture of iodin, and gave arsenic extensively, and pronounced him cured in March, 1891. Except for slight relapses in the mouth he remained well in 1892 and 1893, but in 1894 bullæ and vegetations started again, he came under Hutchinson in August, and died in April, 1895. The case is unique in its duration, apparent cure, and fatal relapse. Although some sixty cases are on record, P. vegetans is fortunately very rare, as fully developed cases are not only almost uniformly fatal, but entail more suffering than any other form of skin disease.*

Symptoms.—Without any preceding illness or any apparent cause the first symptom in the great majority of cases is pain on eating and swallowing, and on examining the mouth the mucous membrane is white and more or less detached, or if very recently formed there may be an unruptured bulla. Any part of the mouth, tongue, palate, pharynx, and larynx may be affected, and at a later period the nares,† conjunctivæ, or vulva also.

A few cases have commenced in other parts; in one of mine

f. prakt. Derm., vol. xi., p. 427, adopting Unna's new name, erythema bullosum vegetans. He also collected twenty-four cases, and read a paper on them at the Bremen reunion of physicians and surgeons in 1890. A case from Russia is reported in Sajous' *Satellite.* Marianelli published an Italian case; abs. in *Viertelj. f. Derm. u. Syph.*, vol. xxii. (1890), p. 236. Nevins Hyde reports a case from America, still alive at time of report, in *Jour. Cut. and Gen.-Ur. Dis.*, vol. ix. (1891), pp. 412, 459. He found and cultivated a bacillus and coccus from an unruptured bulla, but without any proved significance. In the same volume, p. 332, is a case of P. foliaceus malignus, by Munro and Schwartz, which reads like P. vegetans, except that papillomata are not mentioned; in *Lancet.* May 23, 1891, Pagan Lowe of Bath reports a case; and in *Brit. Med. Jour.*, June 9, 1894, F. Cuthbert reports a case under the name of P. foliaceus. P. vegetans, therefore, is clearly a very definite and cosmopolitan clinical entity.

* Köbner published this case with two others and some valuable observations in *Deutsches Archiv f. Clin. Med.*, vol. liii. (1894), and vol. lvii., p. 63, with two more cases. Full French *résumé* in *Annales de Derm.*, vol. v. (1894), p. 890; vol. vii. (1897), p. 816; and Hutchinson published the sequel and analysis of the history in *Archives of Surg.*, vol. viii. p. 129, and colored Plate 156, vol. ix., p. 30.

† In a case of Neumann's the nares were the first part attacked.

bullæ on the chest were the first signs, and the axillary border, abdomen, and genital region have been the starting points in some cases.

After a variable interval of days or weeks, occasionally much longer, bullæ of ordinary appearance, either singly or in groups, come out on the hands, feet, axillæ, and groins, and subsequently on other parts of the body. But instead of drying up as usual they remain excoriated, or ulcerate deeply and sometimes extend serpiginously, while in the folds, such as the groins and axillæ, they fungate into papillary excrescences, which may project half an inch above the surface, secrete a viscid offensive fluid, and closely resemble condylomata. They may also occur in other regions, and in a few cases quite early in the disease.

Some of the excoriations may heal in the center, or altogether, leaving pigmentation or papillary incrustation, but most of them remain as raw surfaces, especially where there is pressure, such as on the back of the head, shoulders, and scrotum; numerous small bullæ and vesicles may often be observed round some of the excoriations, and form one mode of their extension. The matrix of some of the nails is not infrequently attacked, producing a condition resembling onychia maligna. Fresh crops of bullæ lead to more and more denudation of the skin, the whole back becoming raw and sodden in some cases; nutrition is interfered with, owing to the extent of surface involved, and from the condition of the oral mucous membrane, which interferes with the digestion of food; and in some cases the great loss of albumin and the presence of diarrhea. The sensory symptoms are those of burning and itching, but, except in the mouth, pain is only experienced when changing the dressings, which is absolutely necessary owing to the penetrating and insupportably nauseous fetor of the decaying epithelium. Tremor of the muscles even in repose is often to be observed, according to Herxheimer, when the skin is extensively involved. The disease is invariably fatal in from three to twelve months in most cases, either from exhaustion or from intercurrent disease. The temperature is often raised, but seldom to more than 102° F. Examination of the blood * has

* In Dubreuilh's case 42 per cent. eosinophile cells, 44 leukocytes, 14 lymphocytes. In Neumann's case 16,000 white to 4,100,000 red corpuscles,

not yielded any practical results. There appear to be cases in which there are mouth lesions while the skin is not at all involved; such cases often recover under treatment, but while some of them are inchoate P. vegetans, others have possibly been erroneously diagnosed.

Hutchinson asserts that vegetations are exceptional; while I should admit that they are not absolutely essential, as they may cease, or be removed by treatment, and possibly never be present at all sometimes, I should speak with diffidence of any case in which they were entirely absent,* unless the case ran an unusually short course, as in Stopford Taylor's case.† More or less papillomatous development has been occasionally observed in other forms of pemphigus, such as P. foliaceus, and also in dermatitis herpetiformis, but this is an accidental complication common to many forms of dermatitis, and does not bring them into relation with the well-defined morbid condition described, in which vegetation is only one very prominent symptom amongst others equally important.

Hallopeau ‡ has described five cases of a vegetating affection which he has finally called **Pyodermite végétante**. It

an excess of eosinophile cells, and 85 per cent. hemoglobin. In the Danlos Hudelo case only 6 per cent. eosinophile cells; lymphocytes, 14 per cent.

* A man, æt. thirty-six, came to U. C. H. in 1899, No. 346. His disease began with conjunctivitis, three days after cleaning out a stable drain; three days later the mouth was attacked, and a greater part denuded of its mucous membrane; bullæ came on the genitalia. The bullæ were small and came out also in various parts of the body, but not in the axillæ and groins, and there were no vegetations. He died in three months from the onset with high temperature (104° F.) toward the end. Neither the blood nor the bullæ yielded anything to cultivation. P. M.—There were no visceral changes, the principal ones being about the mouth and genitals.

† Two fatal cases of pemphigus, *Brit. Jour. Derm.*, vol. vi. (1894), p. 177; also a case by Filaretopoulo, fatal in eight days, *Mal. Cut.*, vol. viii. (1896), p. 556.

‡ *Internat. Cong. Derm.*, Paris, 1889, *Comptes Rendus*. *Archiv f. Derm. u. Syph.*, vol. xliii. (1898), p. 289, and vol. xlv., p. 323. Good abs. in *Annales de Derm.*, etc., vol. x. (1899), p. 103. Colored Plate in International Atlas, 1890, p. vii., and in his treatise with Leredde. See also Hallopeau's description of the transition case and discussion thereon, *Annales de Derm.* vol. xi. (1898, p. 969, in which Darier considers that the histology supports Hallopeau's view, while Leredde is equally positive that the skin and blood lesions prove its identity with dermatitis herpetiformis. In *loc. cit.*, p. 1055, he gives a second note on the case.

differs a great deal from pemphigus vegetans, but he thinks it is really a pustular form of it, as he has seen the two forms in the same subject both successively and concurrently; otherwise from his description it appears to me more nearly allied to impetigo herpetiformis than to P. vegetans, but it generally takes a more favorable course than either of those two lethal diseases. It is probably better to keep them apart until further connecting links are discovered.

The eruption commences in the genital region or on the lips, mouth, or fingers, the primary lesion being a pustule on a red base. The pustules multiply in close groups, which extend peripherally with a prominent border, while the center dries up into crusts, which soon fall off and leave deep red staining. New pustules appear at intervals at the periphery of the plaque. Hallopeau considers that it extends by auto-inoculation and tends to spontaneous healing with deep stains, but not scars in most cases, but in some there have been indelible scars. The prognosis is relatively favorable, and local antiseptics are sufficient to cure it; it is, however, liable to return and take the more serious form of P. vegetans.

"It differs from impetigo herpetiformis by the depth of the suppurations, by the absence of epidermic elevations from below in gyrate areas, by the absence of febrile reaction, and by its prognosis being less grave" (Hallopeau).

Etiology.—Of this we know practically nothing. P. vegetans attacks both sexes, but women much more frequently than men. It occurs chiefly in middle-aged adults, and I am not aware of any case in a child or in extreme old age.

In Haslund's case a whitlow from a splinter was followed six weeks later by superficial gangrene of the point of the finger, and other whitlows followed on the fingers and toes; four days later bullæ appeared in the mouth and on the labia majora, and that case followed its usual fatal course in seven months. Compare this with de Rochemont's case of P. foliaceus from a similar cause.

Pathology.—It is still a moot point as to whether P. vegetans should be considered a special disease or a variant of pemphigus. The constant presence of successive crops of bullæ if the skin is attacked at all, and the fact that the individual symptoms of P. vegetans may be present in different cases of P. vul-

garis, are strong arguments in favor of the pemphigus view. Unna's theory, that it is a form of erythema multiforme, and Tommasoli's, that it is malignant pemphigoid condylomatosis, meet with no support outside their immediate spheres of influence. That the disease is due to a toxin acting on the nervous system is probable, but like Leredde's theory of *hématodermites*, unproved. That the pseudo-condylomatosis is due to micro-organisms, probably staphylococcus aureus, is shown by their disappearance under microbicide applications.

Herxheimer * found cells of Langerhans in the epidermis, but, like most previous observers, failed to find any organisms which could be regarded as pathogenic. L. Waelsch found pseudo-diphtheria bacilli in two cases, which had a strong lethal effect on rabbits and guinea-pigs, but he could not prove that it was the pathogenic agent; at the same time, Behring's antitoxin prevented death in animals while the control animals without it always died in thirty to sixty hours. Diphtheria antitoxin in Waelsch's second patient improved the condition of the mouth, but not of the rest of the body, and the patient died nine days after the injection with fever prostration and delirium. Leredde finds eosinophilia and other blood changes similar to P. foliaceus and dermatitis herpetiformis. In a man aged twenty-three † Westberg found changes in the columns of Goll and the posterior root zones in the cervical region; in the dorsal region there was diminution of nerve fibers and increase of the connective tissue in the white substance; there was atrophy of the anterior roots of the lumbar region. He ascribed these changes to a toxin producing parenchymatous degeneration and atrophy of the cord, such as occurs in many acute infectious maladies, and also at the same time the skin changes which are not secondary to the cord changes.

Etiology.—There is much hypothesis, but very little ascertained fact, in the etiology of pemphigus generally. Sex has so little influence that while Kaposi, on the strength of 103 cases, states that it is three times more frequent in males than

* K. Herxheimer, *Archiv f. Derm. u. Syph.*, vol. xxxvi. (1896), p. 141, with table of twenty-seven published cases. Abs. in *Annales*, vol. vii. (1897), p. 817. Waelsch, *loc. cit.*, vol. l. (1899), p. 71; vol. lii. (1900), Heft 3, and *Monatsh.*, vol. xxxi. (1900), p. 31.

† Abs. in *Annales*, vol. vii. (1896), p. 70.

in females, other statistics give the preponderance the other way. It is, however, certainly more frequent in children and infants than in adults, but the endemic form among infants has already been shown not to be true pemphigus.

Hereditary * tendency occurs in epidermolysis only, but the occurrence of bullæ on the site of local injuries may also be seen occasionally in other forms of pemphigus.

The special etiology of acute, vegetant, and foliaceous pemphigus has been given under their respective heads.

Kirschner carefully observed a case of a man who, in his work, was subject to great vicissitudes of temperature. After a chill, when sweating, the secretion gradually ceased, and pemphigus developed, and was stopped when the sweat secretion was restored; other attacks were brought on by his resuming his work, and again stopped by sudorifics; finally the attacks ceased when he gave up his employment.

In a severe case of Payne's worry and anxiety appeared to be a chief factor.

Pathology.—Although falling far short of proof, the frequent association of nerve lesions with bullous eruptions is strongly in favor of the nervous system being, at least indirectly, responsible for the production of pemphigus, and this is to some extent corroborated by the efficacy of arsenic in its treatment. What the nervous defect is it is impossible to do more than conjecture, but it lies probably in the vaso-motor centers, and Schwimmer and others regarded it as a trophoneurosis. The more modern doctrine of toxins affecting the nerve centers has been almost proved for acute pemphigus, and is the most probable explanation for the more chronic forms. The exciting action of chills, demonstrable in a few cases, may be explained by the probable assumption that after a chilling of the surface there is in the reaction vascular dilatation and an absorption from the intestine of auto-toxins into the circulation.

Hypothetic as these views are, others which regard the disease as due to excess of ammonia in the blood (Bamberger), defective kidney elimination, etc., rest upon a much more slender basis.

* Kaposi gives an instance in which a young man, his mother, sister, maternal uncle, and half his children had it, but this was also probably epidermolysis bullosa.

Anatomy.—The following observations are limited to the bullæ of the ordinary chronic pemphigus. Most authors regard the actual formation of the bulla as due to an inflammation of the papillary layer, with outpouring of fluid from the vessels, but Auspitz calls it an acantholysis, or loosening of the prickle-cell layer, by the sudden escape of fluid from the vessels, destroying the young prickle cells and lifting up the epidermis as a whole. Any inflammatory phenomena, he thinks, are secondary.

The anatomy of the bulla has been investigated by, among others, Haight, Hebra, Kaposi, and more recently, Kromeyer, Luithlen, Jarisch, and quite recently by Audry and Danlos, Déjerine and Leloir in France, Kreibich in Germany, and by myself, and the contents have been analyzed, with varying results, by several observers.

The bullæ have not all been taken from the same kind of case, but Audry and Danlos'* own observations and analysis of those of others show that even in the same patient all the bullæ have not the same anatomical position, but may be:

1. Developed between the horny layer and the stratum granulosum.
2. Between the rete Malpighii and the cylindrical basal layer.
3. The papillæ may be quite bare, either by the whole epidermis being raised up or by secondary destruction of the epithelial elements which cover the papillæ.

They point out that the slight changes of the papillary layer, mainly vascular, show that there is no true dermatitis. In the most superficial vesicles the rete may be normal, and they come to the conclusion that the epithelial changes are only the most visible part of the effects of a general toxin, which also produces leukocytosis, adenopathy, and urinary changes, etc., and, as Audry forcibly puts it, "The bulla of pemphigus signifies no more than the râles of pneumonia."

Some years ago I examined a bulla a quarter of an inch in diameter from an ordinary chronic pemphigus, and found that, by examining sections made from the edge to the center of the bulla, it could be ascertained that the bulla was not superficial, but the fluid poured out stretched the lower rete cells until they were separated from the corium, and, as the process continued, the lower layers were destroyed and the upper compressed until, at the center, the roof was formed by the horny layer and about the upper two-thirds of the rete, with here and there a fragment of a sweat duct or hair follicle depending. At the border, the lower stretched cells of the rete were still present. The fibers of the corium below the bulla were compressed, and there was free cell-infiltration of the upper layers (Fig. 19). Robinson, however, found that in other bullæ the fluid was between the rete layers, and the horny layer was unchanged, while the papillæ, corium, and subcutaneous tissue were infiltrated with leukocytes, and the blood-vessels were dilated. And in an anomalous pemphigus Pernet found the cleavage at the junction of the

* "Recherches sur les altérations de la peau, du sang, et des urines dans un cas de Pemphigus chronique vrai." Par Audry, Gérard et Danlos. *Annales de Derm.*, etc., 4th series, vol. ii. (1901), p. 113. Critical references to observations of previous workers.

stratum lucidum and stratum corneum, which agrees with many German observations. Audry's most recent observations, as above summarized, explain their differences, and confirm what I stated in the second edition of this work, viz., that: "No general statement as to the position of the bullæ can be made in the face of such discrepancies, and probably it varies with the age and size of the bulla and in different instances. There is no scarring except in rare cases." Eosinophile cells in the blood and bullæ have been found in excess in chronic ordinary pem-

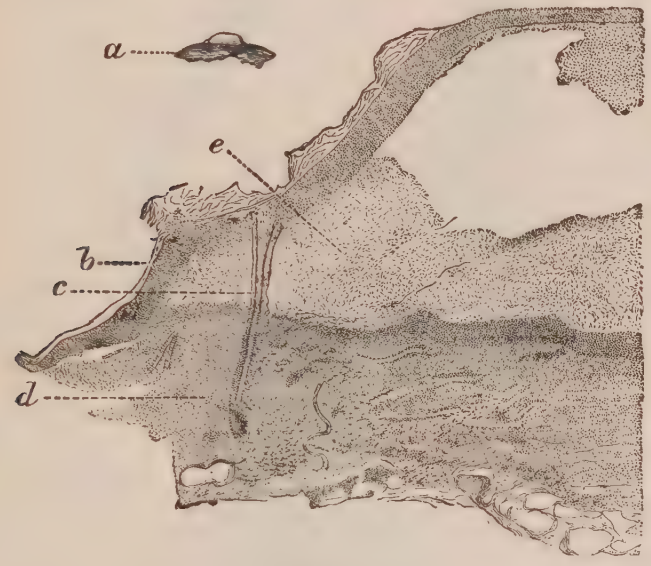


Fig. 19.—Pemphigus bulla. × 50.

a, natural size of bulla; *b*, whole thickness of epidermis lifted up to form the roof of the bulla; *c*, sweat duct traversing bulla; *d*, enormous round cell-infiltration of the upper layers of the corium; *e*, coagulated albuminous contents of bulla.

phigus (Audry, Neusser, etc.). Their presence, while admitted by Leredde in P. foliaceus and P. vegetans, was denied by him for P. chronicus, and he desires to group the first two with dermatitis herpetiformis as blood diseases on the common ground of eosinophilia, and differentiating them from P. chronicus from its supposed absence in that affection. As it appears, however, to be sometimes present, and as Audry has shown that, while present in recent bullæ, it may be absent in older ones, it is evidently premature to found fundamental distinctions on such a disputable factor. In further researches it is important to state the exact clinical characters of the bullous eruption and the age of the bulla examined.

In the main, the contents represent blood serum, and a few leukocytes, even when it is clear, and many may be found when it is turbid. Gibier found micro-organisms in the fresh bullæ of acute pemphigus and in the urine; according to him they are beaded organisms, consisting of two to twenty individuals joined together in the adult state, and of rounded granules isolated or grouped in the young state. Recent observers have

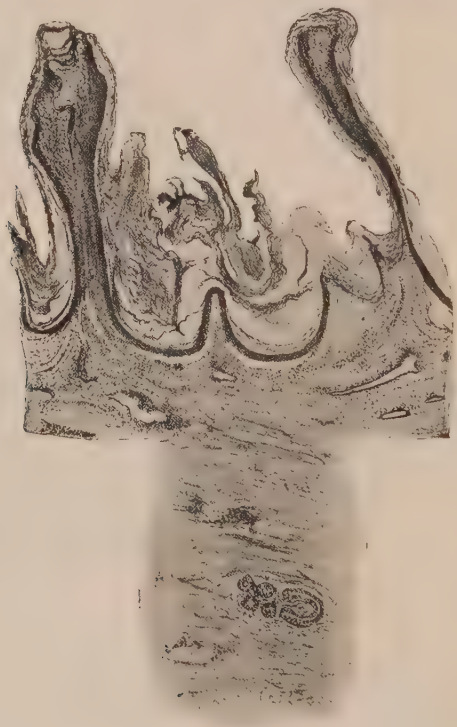


Fig. 20.—Pemphigus vegetans.

Skin from groin, showing enormously hypertrophied papillæ; papillary outgrowth; cell infiltration in papillary layer; dilated vessels; sweat coil with cell infiltration between the coils.

found streptococci, and staphylocci are always present. In the chronic form the presence of micro-organisms is not so constant.

In a case of subacute recurrent pemphigus in a child, I found a few micrococci in recent bullæ, and under cultivation in peptonized gelatin minute bacilli developed. Thin, on the other hand, in one case failed to find them after repeated search. The chemistry of the contents is uncertain; generally feebly alkaline in reaction, it is occasionally slightly

acid—from acetic acid, it is said. Albumin and phosphates are always present, but lactate of soda, chlorids, cholesterin, ammonia, and urea, uric acid, creatinin, leucin, tyrosin, etc., have been described in different instances, but their very variability negatives the idea of their being of any etiological importance. Various changes have been found in the internal organs, but nothing constantly or even frequently enough, except as regards the nervous system, to make one regard them as otherwise than fortuitous.

Diagnosis.—In chronic pemphigus the bullæ appearing in crops at short intervals, without apparent cause, antecedent symptoms, or lesions, or at most only hyperemia of the skin, the process continuing for weeks, months, or years, constitute the most distinctive features, and such cases offer no difficulty in diagnosis, but P. acutus has to be distinguished from those diseases in which bullæ occur as an accidental feature, so to speak, such as erythema bullosum and urticaria bullosa, or where the bullæ form instead of vesicles, as in varicella bullosa, impetigo contagiosa, eczema, herpes, pompholyx, or where the bullæ, though pretty constant, form only a part of the eruption, as in hydroa, herpes iris, etc.

In P. acutus there is no antecedent lesion, as in P. chronicus, but there may be smart febrile symptoms and severe constitutional disturbance. In bullous *erythema exudativum* and *urticaria*, in *hydroa* and *herpes iris*, the other lesions present give the clew to the diagnosis. *Erythema exudativum* and its ally, *herpes iris*, generally run a definite course of a few weeks; and while some febrile symptoms may be present, they are rarely severe. The erythema papule or nodule, also, always precedes the formation of the bulla which forms on it. In *herpes iris* the central bulla with the rings of varying hues is diagnostic. In *urticaria bullosa*, again, the bulla appears on the wheal, and the intense itching and tingling would distinguish it from anything but P. pruriginosus. In this last, also, wheals appear, but they are the secondary lesion, and only develop after the disease has existed for some time. Moreover, the bullæ are not always formed on the wheal, as they are in urticaria bullosa, though such is the case sometimes. The diagnosis from dermatitis herpetiformis is given under that disease.

In *varicella bullosa*, the fact that it was epidemic, the short, favorable course, and the co-existence of cases of the usual type would be sufficient.

Prognosis.—The fate of pemphigus patients varies greatly, and we possess but few data to enable us to anticipate it.

The majority of P. chronicus cases get well in the course of weeks or months, if judiciously treated, though several recurrences in future years must be expected. A few persist for an indefinite period, for years or even for life, and of them a certain number may lapse into P. foliaceus. Many of these may lead to the death of the patient by exhaustion or by laying him open to intercurrent disease. Which of these several courses the disease will take we are wholly unable to predicate; the longer the eruption lasts the more gloomy is the prospect. If the patient is advanced in years, the prognosis must be guarded, as he not infrequently does badly, sinking into a typhoid condition. The presence of albuminuria is another bad element, and when the characters of the bulla are of the destructive order (P. crouposus, diphtheriticus, or gangrænosus) the outlook is especially bad. Except when the disease is of this kind, the pemphigus of infants and children is usually amenable to treatment. P. pruriginosus is very chronic, and there is no knowing how long it will last. The danger of P. acutus is in proportion to the extent of skin involved and to the constitutional disturbance, which may be so great as to destroy life in a week or two.

P. foliaceus is almost invariably fatal, though the cases often last for many years. Sherwell * reports the case of a girl, æt. seven, who recovered from typical attacks in 1877 and 1878, in which linseed oil, outside and in, appeared to be of benefit. She remained well until 1889, when she had a milder and less typical attack, which lasted less than three weeks. The age of the patient is as exceptional as the other features, all other cases having been adults. A case from Unna's clinique, a man æt. forty-one, also recovered; he had continuous baths of sulphate of iron and tannic acid—*i. e.*, ink!—to which his recovery was ascribed. P. vegetans is almost as lethal, and more rapid in its course, but early treatment before the skin is much involved offers some chance of recovery.

Treatment.—Until within the last few years in the majority of cases of *chronic pemphigus* the internal administration of arsenic

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vii. (1889), p. 453; *Brit. Jour. Derm.*, vol. iii. (1891), p. 357.

in some form was the most reliable treatment. It should be given in small doses at first, such as two or three minims of the liq. arsenicalis, increased until it appears to have a hold on the disease, or until the limit of tolerance of the patient is reached. I am, however, far from giving it the title of "specific" that Mr. Hutchinson assigns to it; it approaches most nearly to the position he claims for it in the case of children, but fails in many older persons, and frequently controls without curing the disease. It should never be given where the digestive organs are not in a healthy condition, nor where there is any defect of health which can be detected and otherwise treated.

I have found in salicin a most valuable second string, which often succeeds when arsenic fails, and as it seldom disagrees can be given in cases where arsenic would not be tolerated in adequate doses. Like arsenic itself, it sometimes controls but fails to cure, but in a large proportion of cases it stops the production of bullæ altogether. It must be given in full doses, beginning with 15 grains dissolved in water, three times a day. The dose may be increased up to 30 grains. Neisser advocates subcutaneous injections of strychnine. It is worth trying when other measures fail.

In some instances quinine in large doses, iron, cod-liver oil, and general hygienic measures, such as a strongly-supporting diet, a bracing climate, with rest of body and mind, as far as that can be secured, effect a cure when so-called specifics fail.

Iodid of potassium should never be given; it generally aggravates bullous eruptions, and I have known them become gangrenous under its influence.

Locally, dusting powders, such as boric acid with oxid of zinc and starch, are often useful; but on the whole in my experience, lotions, such as the lactate or glycerin of the subacetate of lead (one to six water) or calamin liniment, give most relief from the feeling of tension and soreness, but local applications have no curative effect. Where the roof of the bullæ is prematurely removed, boric acid ointment would be the most suitable application.

In *acute pemphigus* it is very doubtful whether internal treatment has any effect, and the rapid course leaves little time for remedies to act. In view of the septic character of many cases quinine, in from 5 to 10 grain doses in an effervescing potash

and ammonia mixture, should be given every three or four hours.

If this fails, indications for treatment should be carefully sought after and vigorously followed up, but they are too often absent, and all that is left is to combat adverse circumstances as they arise, with a general supporting treatment from the first, in anticipation of the exhaustion which too often supervenes.

The same local remedies as those recommended for chronic pemphigus give temporary relief.

In *P. pruriginosus* the itching may be temporarily relieved by the antipruritic lotions recommended for chronic urticaria (Lotions, F. 20 to 38), such as the liq. carbonis detergens, terebene, sanitas, nascent sulphur, etc. Internally, arsenic is not very successful, but in adults, atropia injections of 1-150 to 1-60 of a grain might be tried.

In *P. foliaceus* internal treatment of all kinds has failed entirely, either to cure or alleviate. Local means, similar to those for eczema, give relief and heal the skin temporarily; the oleate of zinc or lead, or boric acid ointments, and the lotions and liniments before alluded to, are some among many suitable applications. Continuous baths of simple warm water, where practicable, give the most relief; in Vienna the patients have lived in the baths for months in comparative comfort.

In *P. vegetans* Hutchinson has shown that small doses of opium, ℥iij to ℥x liq. opii sedativi three times a day, sometimes controlled the severe and cured the milder form. It was not tried till late in the disease in his three fatal cases, but was so in my cases, but unfortunately without success. Arsenic had some controlling influence in one of his cases for a time, but it generally fails egregiously. My patients experienced great relief from local disinfecting measures, the foul odor having previously pervaded the whole ward. As nearly the whole back becomes excoriated, they should be laid on lint soaked in carbolic oil, one in forty, and another sheet of it applied in front. The papillary growths in the axillæ and groins should be freely dusted with iodol, and the mouth frequently rinsed with liq. sodæ chloratis, and permanganate of potash solution sprayed in, several times a day. By these means all fetor is removed and the patient made much more comfortable. Obvi-

ously, such a patient should be placed on a water-bed from the first, and the dressings not changed more frequently than is absolutely necessary, as every movement gives pain.

HYDROA.

Deriv.—ὕδωρ, water, or more directly, ἵδρωα.

Hydroa was a term used by many of the older dermatologists for various bullous and vesicular eruptions, and had fallen into disuse until revived by Bazin for certain groups of bullous eruptions which, in their clinical aspects, stand midway between erythema multiforme and pemphigus; but some of them are separated by a very narrow line from some forms of pemphigus, such as P. pruriginosus.

Recognizing that there were such eruptions hitherto unclassed, many French, English, and American dermatologists have taken up the term, while the German school for the most part ignore it.

Hutchinson * used the term for a bullous eruption produced by iodid of potassium, but such an eruption scarcely requires a separate name; Bazin † proposed three varieties—H. vésiculeux, H. bulleux, and H. vacciniforme. It was subsequently acknowledged, even by Bazin himself, that H. vésiculeux is the disease that Bateman described as erythema and herpes iris; it has therefore no *raison d'être*.

H. bulleux is only one phase of H. herpétiforme, and is now disused. Hydroa herpetiformis was introduced by Tilbury Fox, and was used in the previous edition of this work and in my Atlas for what Duhring subsequently called dermatitis herpetiformis; but this latter term is now so generally adopted that for the sake of uniformity it is placed at the head of the article on the disease. Hydroa vacciniformis seu æstivalis is, therefore, the only one left of the group. Hydroa puerorum of Unna is a subvariety.

* Sydenham's Society's Atlas, Plate XXXIII.

† "Affections Cutanées Arthritiques," pp. 194, 261, and 403.

DERMATITIS HERPETIFORMIS (Duhring).*

Synonyms.—Hydroa herpetiformis (Tilbury Fox); Pemphigus pruriginosus (Chausit and Hardy); Herpes gestationis (Milton and Bulkley); Herpes circinatus bullosus (E. Wilson); Pemphigus circinatus (Vienna School); Dermatites polymorphes douleureuses (Brocq).

Definition.—A grouped vesicular or bullous eruption associated with ringed and other erythema lesions, and intense itching.

While Bazin, as already shown, to some extent foreshadowed it, it is chiefly through Tilbury Fox,† followed by Duhring,‡ in some very able papers on Dermatitis Herpetiformis, that we began to get a clear idea of this protean disease. Unfortunately, the great variations in its clinical aspect led different authors in former times to regard these variations as different diseases, and to give them different names, according as one or other feature struck them most; but now that they are all brought into one category it is shown that the disease is not so rare as it was formerly considered to be.

Symptoms.—In cases of acute development it may begin with

* Author's Atlas, Plates XX., XXI., and Fig. 1 of xxii, under Fox's title of Hydroa Herpetiforme. The plates show several of the variations in the clinical characters of the disease.

Plate II., St. Louis Atlas, shows bullous form well, but in Plate X., in concentric circles, the diagnosis is open to dispute. Hutchinson's smaller Atlas, Plates XCIX. and C., shows herpetiform character well.

† Fox, "A Clinical Study on Hydroa," posthumous paper in *Amer. Archives of Derm.*, vol. vi. (1880), p. 16.

‡ Duhring, "Dermatitis Herpetiformis," *Jour. Amer. Med. Assoc.*, August 30, 1884, and several subsequent papers in *N. Y. Med. Jour.*, 1884 and 1887, and elsewhere, collected by New Syd. Soc. in 1893 in "Selected Monographs in Dermatology." Also "Hydroa," *Brit. Med. Jour.*, May 22, 1886, a general view of the subject by myself. See also "Dermatite Herpétiforme," a valuable monograph by Brocq, *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 1, etc., and vol. x., series iii. (1898), pp. 849 and 945, on "Dermatites Polymorphes Douloureuses," a critical review of the views of other authors and of his own. Discussion, Derm. Soc., Lond., *Brit. Jour. Derm.*, vol. x. (1898), p. 73. In vol. xi. (1899), p. 213, is an abs. of Brocq's criticism on this discussion from vol. ix. of the *Annales*, 1898, October and November.

shivering and slight febrile symptoms, rarely severe, but often the first symptom is only burning or itching, where the eruption is about to appear. The eruption is bilateral, and in the main symmetrical, situated most frequently on and about the axillæ and groins, the flexor surface of the wrists, or on the abdomen or ankles, and is, as a rule, most abundant on the flexor surface of the forearms, the front of the trunk, especially the abdomen, the buttocks, and outer part of the thighs; the legs below the knee are comparatively free, but no part is quite exempt. The mucous membranes of the mouth, pharynx, and larynx, and conjunctivæ may be affected, and the involvement of the gastro-intestinal canal has been suspected.* The polymorphism, which is one of its most striking clinical characters, is produced by the varying proportion of its three main features; 1. Herpetiform vesiculation; 2. Ringed and other erythemata; 3. Burning and itching.

The eruption, in a typical case, first appears as slightly raised, flattish, rose-red papules about a quarter of an inch, which speedily enlarge to patches of about half an inch in diameter, the center of which soon becomes depressed, and changes to a purplish hue; at the same time the patch extends at the periphery *pari passu* with the enlargement of the center of involution, and so a circle is formed with a raised red margin and a flat purplish center. This part of the process closely resembles an erythema papulatum, passing into an erythema circinatum, but differs from those diseases inasmuch as severe pruritus attends its evolution; circles, or segments of them, may also be formed by the aggregation of papules in this form, or they may form groups. When the circle has reached to an inch or more across, which it may do in a day or two, the vesicular and bullous elements usually appear. These vesicles, as a rule, develop on the spreading border, or on the aggregated papules, varying in size from a pin's head to a pea, or larger; but in some cases bullæ, one inch or more across, are numerous, and sometimes the center of the vesicular erythematous circle is occupied by a bulla, the whole patch resembling, except in

* In a fatal case of Galloway's ulceration of the intestines was found at the autopsy. For an extensive and primary involvement of the mucous membranes, see Morris and Whitfield's case, *Brit. Jour. Derm.*, vol. ix. (1897), p. 213.

coloring, a herpes iris. The erythemata may continue to spread beyond the vesicles, and, reaching other lesions, cover a large area and form either plaques or even extensive infiltrations * of a bright red color and thickened, and firm to the touch. Vesicles and bullæ may also arise singly or in irregular herpetiform groups, independently of the erythema, being vesicular from their first appearance; moreover, the erythematous lesions do not all go on to vesiculation. On the development of the bullæ or vesicles the itching ceases and a feeling of burning or tension takes its place. Sometimes burning is the first, or it may be the chief subjective symptom, and is only relieved when the contents of the bleb are evacuated; but, like herpes vesicles, they do not rupture spontaneously, but dry up and leave a thick scale. The contents are usually quite clear, but sometimes become purulent and more rarely bloodstained. In one case micrococci were readily grown by me from the clear fluid of a bulla, introduced into gelatin peptone.

Although there are exacerbations at intervals, there are sometimes no complete remissions, fresh erythematous and vesicular lesions developing almost daily. Erythema, vesicles, bullæ, and pustules may be simultaneously present in different parts of the body.

The course of the disease is long and uncertain, often lasting months, or even years (twenty, Brocq; I have known over ten), unless controlled by treatment, and relapses or recurrences are the rule. In very chronic cases, therefore, the constant scratching may entail the usual consequences, including superficial ulcers, scabbing, boils, lymphangitis, enlarged glands, and lichenification (Hallopeau), though as a rule "the scratched skin" is but little developed, considering how bitterly the patients complain of the itching. As a rule, the general health is unaffected for a long time. Though the loss of rest may wear out the patient greatly, fatal cases are rare except in the aged, and then delirium generally occurs towards the end. As in pemphigus, so in this, scratching or blows will sometimes produce bullæ. Brocq and Tenneson have recorded purpura patches as a complication.

* In two fatal cases in octogenarians this condition preceded for several days the vesiculo-bullous manifestations. J. 619 and K. 752, Private notes.

The urine has been frequently examined, but though the changes are numerous they are too inconstant to have much clinical value. Oliguria is said to be the rule (Besnier), but polyuria is sometimes present, and Leredde says it is of favorable omen. There have also been found albuminuria, glycosuria, indicanuria (Leredde), diminution of urea and uric acid, and of toxicity of the urine. Hardouin * records a case in which the attacks always occurred after periods of hypoazoturia and coincided with a return in great part of the elimination of urea. Bar in herpes gestationis agrees with the first, but not the second proposition. Tenneson thinks that marked hypoazoturia is a special feature of the disease, but Besnier has shown that it is a common feature in all forms of extensive dermatitis. On the other hand, Hallopeau and Tête have found an alkaloid in the urine which provoked an eruption on the skin of a guinea-pig. Perrin says that in herpes gestationis there is diminution of toxicity in the urine, and when a cure is effected the toxicity rises again.

Variations.—Where all is variety it is difficult to say what is a typical case and what a variation; nevertheless, while the preceding is a fair account of a severe case, there are great differences in appearances, according to the predominance of the erythematous, vesicular, bullous, or pustular elements, and the severity of the itching. Polymorphism is absent in some attacks, or may be inconspicuous.

Sometimes the erythematous element is the only one present, or is so predominant † that the vesicular part may be overlooked. In Frank W., æt. four, flat hemp-seed to pea-sized erythematous papules appeared on the abdomen and thighs, and circinate and gyrate patches, from half to one inch in diameter, developed from these; one gyrate patch extended from the pubes to the umbilicus, slightly scabbed from scratching. This erythema continued several weeks, with the accession of fresh papules from time to time, but no vesicles, and then an outbreak of vesicles, grouped and scattered, appeared on the lower limbs, with a ringed erythema interspersed. Attacks of this kind, and also of the circinate erythema, continued

* *Annales de Derm.*, etc., vol. i. (1900), p. 1137, gives numerous references to previous work on the subject.

† Master S., æt. twelve, private notes, F. 79, was an example.

at intervals for between two and three years, but there was seldom erythema alone after the first; occasionally there were pustular * instead of vesicular elements. Again, in a woman, æt. forty-four, the typical rings and segments of circles of papular erythema, attended with moderate itching, came out in crops, but there was no vesiculation at all throughout its course of three or four months.

In Henry N., æt. twenty-nine, the disease had existed only a month; beginning on the flexor surface of the forearm, the eruption extended unequally over the whole body, except the scalp, and consisted entirely of itching, erythematous papules, patches, and circinate forms; vesicles one-eighth of an inch across existed on the palms only; he speedily recovered under treatment.

On the other hand, the bullous element may be the prominent feature. Thus in a youth of eighteen under my colleague, Sir Thomas Barlow, bullæ an inch or more in diameter were present, more or less all over, beginning as small vesicles and rapidly enlarging to various sizes; from time to time crops of erythematous lesions of the usual type came out symmetrically, and on these vesicles might or might not appear, and rings of vesicles with central bullæ sometimes were seen; a few of the vesicles became purulent. In other cases the vesicles remained very small. This man was under my observation for years, with annual recurrences, sometimes slight, sometimes severe, and with every variation in size of the vesicles or pustules, and in the proportion of erythema.

In Samuel P., æt. forty-five, bullæ, without preceding erythema, developed on the ankles and dorsum of the feet only, while on the trunk and wrists there was an exclusive development of the usual erythema forms; he got well under treatment in about six months.

The size of the vesicular element varies within wide limits; a millet seed to a pea is the usual size, but they may be from a pin's head upwards. In a case reported by Morris and Whitfield the lesions resembled those of vaccinia.

Some cases look like a universal herpes zoster,† for which they are sometimes mistaken; others approach to the ordinary

* Plate XXII., Fig. 1, of my Atlas represents one such attack.

† Plate XX. of my Atlas is a well-marked example.

pemphigus type, and if the bullæ are in circles they are reported as pemphigus circinatus; others, again, as persistent erythema circinatum.

In one case bullæ of the ordinary pemphigus type developed on the feet and small bullæ came out subsequently; on the other hand, G. H. Fox of New York published a case which began as a herpetiform eruption, and lapsed into a pemphigus.

When the pustular element is much developed cases may resemble and are sometimes reported as examples of the impetigo herpetiformis of Hebra. A severe case of this kind has been reported by Fordyce * in a male, who recovered. Wende's † was severe, but of a different type. There were rings of pustules with erythematous rings around it.

When the itching is very severe the appearance of the disease is much modified by the consequent scratching, and the characters of the disease may be more or less concealed. In Charles B., a stoker æt. fifty-four, the scabbing and excoriations were so great that at first sight pediculosis was suggested, but the distribution not agreeing with that, close examination showed circinate and herpetiform groups of pin's-head papules, with a pin's-point vesicular cap. The patient was much distressed and worn. As the treatment relieved the itching, the true character of the eruption became more evident. In many cases the itching is moderate and only pronounced at night. I have also seen a case in which, with all the other symptoms present, itching was absent; this is very exceptional.

Circumscribed cases occur in which the eruption is confined to one or more regions. In the case of a man under me at U. C. H. for years, the eruption was limited to the axillæ and its folds, and sometimes about the gluteal cleft and groins there were grouped pea-sized vesicles with great irritation. Audry mentions one case of a girl of sixteen, who from the age of three was subject to the eruption on the back of the wrists, hands, and bend of the elbows and knees. In another, a woman, æt. twenty-five, it was in the same positions on the upper extremity, but none on the lower. Corlett's case was

* Fordyce's case, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xv. (1897), p 495, with colored and microscopical plates.

† Wende, *loc. cit.* vol. xix. (1901), p. 171. Compare with Hallopeau and Liddell's cases (*vide* pp. 333-334).

limited to the forearms and thighs, Balzer's to the scalp, back, and leg. Gaucher and Barbe, etc., also record localized cases. Brocq's case left cicatrices and epidermic cysts on the site of the bullæ.

Herpes gestationis was the name formerly given to dermatitis herpetiformis when it occurred in pregnant or puerperal women, before its nosological position was understood.

Brocq in his earlier writings divided the diseases into different groups of acute and chronic pruriginous polymorphous dermatitis, and placed herpes gestationis in a third group; but there are intermediate links of every kind, and I have seen exactly the same lesions in a pregnant woman, an elderly spinster, and in a man; the pregnancy is, therefore, only one element in the etiology, and Brocq admits it is only a variety. Out of fifty consecutive cases of D. herpetiformis of mine six were of this type.

Once it has appeared it recurs usually with each succeeding pregnancy, being sometimes the earliest indication to the patient of her condition. It then continues usually throughout child-bearing, a violent outbreak ensues a few days after delivery, and then it gets well, either at once or gradually, by the attacks becoming of diminished severity until they reach the vanishing point. Such was the case of Emma H., æt. thirty-four, in whom it recurred in three successive pregnancies. There are, however, considerable variations in its behavior. It may begin at any period of pregnancy, or soon after it.

In Elizabeth G. it occurred in four successive pregnancies under my observation. The first three days after confinement with her fourth child; the second at the sixth month of pregnancy; the third in the eighth month, and the fourth in the seventh month. All the symptoms were present in a marked degree. Barendt's case was more constant; four out of five attacks were in the fifth month of pregnancy, it stopped one month before, and recurred soon after confinement, lasting from one to eight weeks.

Dinah S. in eleven years had seven pregnancies, and had attacks in each one. She and E. G. scratched the bullæ into ulcers on the leg. Latterly S. had never been free from eruption. In Mary W. it missed one pregnancy, but recurred the next.

In Jane F. at the fourth attack, she was found not to be pregnant, but to have cancer of the cervix uteri. She had not been free for three years, and it persisted badly for nine months after her last confinement. It is said that the death of the fetus frequently occurs in herpes gestationis, but I cannot support this from personal experience.

Duhring, Besnier, and Galloway * also report cases which have persisted after childbirth or recurred independently of it, and even where it has disappeared during pregnancy and recurred when the menses were established. Bulloch obtained a pure culture of staphylococcus albus from the fluid of a recent bulla, in a third attack just after parturition.

Hydroa Bulleux, of Bazin or, as Fox preferred to call it, **Hydroa Pruriginosa,** is a very rare form, and is attended at its development with intense itching, and sometimes preceded by slight febrile symptoms, followed by the formation of small bullæ not exceeding the size of a split pea, and commencing as vesicles, without any antecedent lesion. They increase in size, with the contents clear at first, but becoming turbid in a few hours. As the contents get absorbed, slight umbilication is produced, and ultimately the bulla dries up, leaving a thin, leafy scale, or, if scratched, a blood crust; or where many bullæ have coalesced, foliaceous crusts, something like P. foliaceus, and when these are thrown off a hyperemic, subsequently pigmented, surface is left. The eruption comes out in a succession of almost continuous crops, the bullæ being discrete or grouped irregularly, but never in circles. It may be partial or general, affecting even the palms and soles, but more abundant in some parts than others, and with free intervals. But the disease does not always begin with bullæ of the preceding characters; thus Fox's case † began with a circinate erythematous

* In Galloway's case the first three attacks began three days after confinement, the fourth in the fourth month of pregnancy, and continued for three months after parturition; there was eleven per cent. of eosinophilia.—*Brit. Jour. Derm.*, vol. xiii (1901), p. 413.

† Case 7 of Tilbury Fox's paper, *loc. cit.*, which was also under my observation throughout its whole course. A subsequent attack is recorded by Sangster and Bruce on "Rare Form of Itching Vesicular Eruption, (?) Hydroa Bulleux," *Med. Times and Gaz.*, January 5, 1884, with dis-

eruption, like that already described, which thus forms a link with the usual type of dermatitis herpetiformis.

Hallopeau * has described in a man, æt. sixty-three, an anomalous form arranged in concentric circles of closely crowded vesicles, or, as he calls it, "en cocardes." There were erythematous circles between the vesicular circles which varied from two to six. It resembled one of the forms of Bateman's herpes iris, but instead of being on the extremities, especially the hands, it was almost entirely on the trunk, and was accompanied by intense itching. The concentric arrangement ceased after a time, and then ordinary blebs appeared. Death ensued eight weeks from the onset with acute nephritis. There was a purpuric eruption towards the end. Liddell of Harrogate and Wende have recorded somewhat similar cases, and Erasmus Wilson also in 1874, as "Pemphigus iris." The diagnosis is open to discussion, and I should be more inclined to regard them as an unusual form of herpes iris than of dermatitis herpetiformis.

Complications.—Besides those due to scratching, keratosis palmæ et plantæ, as already described in Pemphigus, have been observed by Besnier, Brocq, and myself.

Purpuric patches have been observed by Brocq and Tenneson.

Vegetations following the bullæ resembling those of pemphigus vegetans have been recorded by Hallopeau, Brocq, Wende, and myself. They are probably a product of pus cocci.

In Hallopeau and Brodier's case the nails fell off, and the vegetations disappeared spontaneously in a few weeks, leaving brown stains. Scars, pigmented or not, are only left when there has been severe scratching or suppuration, as in Hallopeau's case.† Hallopeau has observed pemphigus foliaceus

tinctly herpetiform features. Plate LXXII. of T. Fox's Atlas represents one phase of the eruption.

*St. Louis Atlas, Plate X. Also good critical note by Pringle in English edition. Liddell, *Brit. Jour. Derm.*, vol. viii., October, 1896, p. 385. Erasmus Wilson, "Lectures on Dermatology" (third edition, 1874), p. 124; and Coll. Surg. Museum, No. 12 of 1895 Catalogue, where I have classed it with Erythema iris. In 1875, Catalogue No. 130, Wilson called it Pemphigus iris.

† A case with lichenification, cicatrices, and persistent mental disturbance. *Annales de Derm.*, vol. iv. (1893), p. 774.

supervene in long-standing cases, but Brocq disputes this diagnosis and calls the sequel "Herpétide maligne exfoliatrice" after Bazin.

Brocq * wishes to widen the conception of D. herpetiformis into one vast group called by him dermatites polymorphes douloureuses, characterized by:

1. Painful phenomena of variable intensity, but nearly always strongly marked, often out of proportion to the eruption.

2. Polymorphic eruptions more or less erythemato-vesicular, erythemato-bullous, sometimes urticarial, papular, sometimes herpetiform, more often grouped, but possibly disseminate.

3. A marked tendency to successive crops of eruption.

4. Preservation of general good health with few exceptions.

He divides them in four groups:

I. Acute polymorphic painful cases.

II. Chronic polymorphic recurring painful cases.

III. Herpes gestationis cases, or painful polymorphic gestation cases.

IV. Intermediate or transition cases between the above and other related morbid types.

Each of the above groups has minute subdivisions, and for these and the grounds upon which he founds them the monograph itself must be referred to. Much can be learned from it, but I regret that it has not convinced me of the practical advantages of adopting his views and nomenclature as distinguished from those founded on those of the majority of modern dermatologists.

Etiology.—Our knowledge is insufficient to allow of many positive general statements being made. Bazin lays stress on the presence of a gouty predisposition; but my experience does not lend much support to this. Exposure to cold has seemed an exciting cause sometimes; nerve shock and severe mental emotion have immediately preceded the attack in many instances (G. T. Elliot collected ten cases), and nervous exhaustion from worry, anxiety, loss of rest, etc., is probably a predisposing influence.

Its occurrence during pregnancy, and recurrence with several succeeding pregnancies, show that there is some etiological re-

* *Loc. cit.*, *Annales*, vol. ix. (1898), p. 953.

lationship, probably reflex irritation of the vaso-motor centers; and the irritation of these centers, either direct or indirect, is the most probable pathology, so that this brings it close to pemphigus vulgaris, the difference being more clinical than pathological.

Age.—Dermatitis herpetiformis occurs in both sexes, being most frequent in men in spite of the gestation cases of women, and least often in children. A child, æt. three, is the youngest I have met with. The oldest case I know of was one of my own, a man, æt. eighty-six. It is, however, most common in adults, between thirty and forty, but it is fairly frequent between twenty and thirty, and between forty and fifty.

Bowen has recorded five cases in children apparently due to vaccination, but the diagnosis was not undisputed (*vide* Vaccinides).

Pathology.—This can only be conjectured; my own view is that it is the same as that of pemphigus, the difference between the two affections being clinical rather than pathological, and probably dependent on the individual rather than on the toxin. Hallopeau shares this view, while those of the Vienna School who follow Kaposi have always refused it even a clinical separation from pemphigus. On the other hand, Besnier, Brocq, and most of the French School support Duhring in considering it quite distinct. Many French observers, especially Perrin and Leredde, consider that the toxin is a product which in health is eliminated by the urine, but in renal disease accumulates and acts on the nervous system, the skin, and the blood cells—hence eosinophilia. They cite its frequency in pregnant women as corroborative, as the interference with the renal function is so frequent in pregnancy; but that can equally well be cited as a proof of its being due to reflex nerve irritation or to a toxin from a non-renal source, such as the intestine. In favor of the latter I have seen several cases, and in two senile cases the probability of the intestine being the source of the toxin was very strong.

Leredde lays great stress on the abundance and constancy of eosinophile cells in the blood, in the vesicles and bullæ, the dermis and the epidermis, in this disease, and considers this a diagnostic feature, as in no other diseases except pemphigus vegetans and foliaceus are they found constantly in such abun-

dance. Hence he considers them all hématodermites.* In leprosy they may be as abundant in some cases and not above normal in others.

Normally there are one or two eosinophile cells in a hundred white corpuscles, while in D. herpetiformis there are always eight to fifteen, and may be as many as forty per cent., but cases as low as four per cent. are recorded by several observers. The number present rises or falls with the exacerbations and remissions of the disease. There are some other less important changes also noted by Leredde in the blood. At the same time much more research is required before his deductions can be accepted unreservedly;† and, as already mentioned in the pathology of pemphigus, other observers dispute his claim that the abundance is diagnostic or even constant.

Anatomy.—Unna‡ has examined the lesions of a mild and a severe form, and although they appear to be very different at first sight, he says the histological basis is the same, viz.: "The edema and cellular infiltration corresponding to a vascular area of the skin, whose chief seat is the papillary body; the utterly passive behavior of the epithelium, which only presents edema and inter-epithelial blisters, or is completely elevated by serum; and finally, the complete absence of leukocytes."

Diagnosis.—The most distinctive features are the occurrence of severely itching, circinate, and papular erythematous lesions, with vesicles and bullæ, which have a tendency to group herpetiformly.

It is most likely to be mistaken for pemphigus, especially pemphigus pruriginosus, and bullous forms of urticaria and erythema exudativum. The extreme itching is sufficient to

* "Hématodermites," *La Presse Médicale*, December 28, 1898.

† *Examination for eosinophiles in the vesicles.*—1. The liquid may be examined directly under a cover-glass, when the eosinophiles may be easily recognized by the presence of large reflecting granules. 2. After fixing by alcohol-ether, stain by concentrated hematein of Meyer. Then immerse for a second in a one per cent. watery solution of Orange G.

Examination of the blood.—The blood should be evenly and thinly spread on a cover glass fixed by alcohol-ether, stained by strong hematein and then by the following solution: Alcoholic solution of eosine 1, water 70, spirit of 90° strength, 30. (From Hallopeau and Leredde's "Dermatologie," p. 719.

‡ "Histopathology," p. 144.

distinguish it from the ordinary forms of *pemphigus*, and in the case of H. bulleux the bullæ are of small size.

From *pemphigus pruriginosus* there may be some difficulty, but the mistake would not be of great practical importance. As a rule the bullæ are smaller in hydroa, but this is not reliable. In pemphigus pruriginosus there are no erythematous lesions at first, and when wheals subsequently form they are not symmetrical; the vesicles and bullæ tend to group in hydroa, not in pemphigus pruriginosus. The monomorphous character of the latter is the most reliable feature. If Leredde is correct, the presence of a high degree of eosinophilia would be decisively in favor of dermatitis herpetiformis.

In *urticaria bullosa* there would not be the symmetry in the lesions which is observable in the erythema of dermatitis herpetiformis nor yet the tendency to group and take circinate forms, but there would be itching pink lesions from which the bullæ would arise, but none independently of them, except sometimes on the palms and soles.

In *erythema bullosum* there is not severe itching, and there would be no bullæ or vesicles arising independently of the erythema.

The erythematous cases, in which there are no vesicles for a long time, would naturally be mistaken for erythema exudativum circinatum. The persistently recurring exacerbations, and the far greater itching than that of ordinary erythema, should excite suspicion until time and vesicles come to our assistance.

Hallopeau's form (en cocardes) must be very difficult to distinguish from herpes iris, in which such an arrangement is the rule. The eosinophilia test might be applied.

Prognosis.—Most cases, if judiciously treated, will get well in a few weeks to a few months, but the disease tends to recur in future years, the attacks becoming weaker and eventually ceasing, which is very much the course of ordinary pemphigus. On the other hand, some cases go on for many years, the patient never being quite free, or having only short intervals of freedom. Severe cases in the aged are apt to terminate fatally; while the mortality at all ages is only about five per cent.

Treatment.—Place the patient in as favorable a position as his circumstances will admit of, so as to avoid overwork,

whether of body or mind, or exposure to worrying conditions. The state of the digestive organs must be inquired into, and if necessary treated; a highly nutritious and easily digestible diet ordered, alcohol restricted, and sometimes avoided altogether; change to a fresh bracing air, if possible, should be arranged, and tonics given suited to the patient. While these general measures should be carried out as far as practicable, they really only pave the way for specific medicines, such as arsenic, salicin, and phenacetin, and in some cases quinine and belladonna. Arsenic, in this as in most recurrent bullous eruptions, has long had the leading *rôle*, but it is powerless as a rule until 8 or 10 minim doses of the liquor arsenicalis, or, in some cases, the limit of the patient's tolerance of the drug has been reached. Then in favorable cases the bullæ cease to develop in such numbers, or there are longer intervals, and ultimately the eruption ceases altogether. This is usually attained in a month or six weeks, but it may require a longer course. Cacodylate of soda would probably act in a similar manner, but the risks attending its use are pointed out in the article on Psoriasis. Of late years arsenic has, in my practice, been largely superseded by salicin. It is given in the same kind of case, and has so often succeeded, even where arsenic has failed, that I now generally start with it. Beginning with 15 grains of salicin three times a day, the dose may be increased rapidly up to 25 or 30 grains, and if the bowels are kept open there is rarely headache or other disagreeable symptoms. It is soluble to the extent of 19 grains to the ounce. As in pemphigus, both these drugs in some cases control the eruption without altogether preventing it, and in others fail completely.

Tilbury Fox preferred quinine in large doses, 2 to 10 grains; and I, also, have found it efficacious in some cases, given with an effervescing citrate of potash mixture. Cod-liver oil is generally desirable.

Phenacetin is sometimes very successful, especially in cases where the burning and itching are very intense and tend to wear out the patient. It may be given in 5- to 10-grain doses three times a day, or as a supplement to arsenic or salicin 10 grains at night, when it helps to secure rest. Morris strongly advocates this drug. Antipyrin acts in a similar way.

When the other drugs have failed belladonna has sometimes

succeeded; it, also, must be given in full doses, beginning with 15 minims and increasing up to 30 minims, or more, of the tincture three times a day. Should there be distinct evidence of the gouty diathesis, alkalies, colchicum, and diuretics, especially acetate of potash, would be appropriate, but iodid of potassium must never be given, as it is liable to produce serious aggravation of the eruption.

Locally.—Duhring found that sulphur ointment gave great relief in some cases. Where practicable, sulphid of potassium baths, from ʒss to ʒij to the 30-gallon bath, might be tried, and Harrogate, Strathpeffer, or Aix-la-Chapelle would be indicated among the spas.

Another form of using sulphur baths is that of nascent sulphur, by means of the sulphaqua powder dissolved in the water, or by dissolving ʒj to ʒij of hyposulphite of soda in one jug, and ʒss to ʒj of tartaric acid in another, mixing them together and then adding them to the bath. Where the bullæ are large and have ruptured and the eruption is extensive, these sulphur remedies might be too powerful to use; then alkaline and bran baths, with or without liq. carbonis detergens, frequently give great relief, and if taken at bedtime will promote sleep, which is usually otherwise much disturbed. Dusting powders of starch and zinc, and sometimes of kaolin and a small quantity of creasote, are useful. In other cases lotions are preferable; those of calamin and lactate of lead are good, but generally the liquor carbonis detergens ʒij to ʒviij, or other anti-pruritic agents (Lotions, F. 20 to 38), are the most reliable, and by obviating the necessity of scratching, materially facilitate the return to health. Boric acid ointment would probably be the best application to raw surfaces. It must be remembered that some cases improve when they are kept in bed at one temperature.

HYDROA VACCINIFORMIS SEU ÆSTIVALIS.*

Synonym.—Recurrent summer eruption (Hutchinson); Hydroa puerorum (Unna).

Definition.—A recurring summer eruption of childhood, usually with vesicles, which leave scars.

Bazin was the first to describe this disease in 1862; but owing to its variety and rarity, and his description applying to one phase of it, it has only recently been identified. Hutchinson made his description independently, in 1888. Since then cases have been reported by numerous observers in Europe and America, both North and South (Bahia), so that it is practically ubiquitous, though still a rare disease, as less than thirty cases have been published.

Bazin's description, from a single case, though he subsequently saw others, is as follows: "It appears after exposure to much wind or to the sun. There may be slight malaise or anorexia, and then the eruption comes out on the uncovered regions, such as the nose, cheeks, wrists, hands, and then other parts, including sometimes the mucosa of the mouth. Red spots first appear, on which rounded vesicles, like those of herpes, spring up. On the second day distinct umbilication is produced; then the contents become opaque, and resemble a smallpox or a vaccine pustule; each dries up into a crust from the center toward the circumference, and when the crust falls off leaves a depressed cicatrix; these scars, when numerous,

* Illustrated. Author's Atlas, Plate XXII., Figs. 2 and 3. Hutchinson's smaller Atlas, Plates CVIII. and CX. Extreme cases, both females.

Literature.—Bazin, *loc. cit.* Hutchinson, *Clin. Soc. Trans.*, vol. xxii. (1889), p. 80, with chromolithograph. Jamieson, "Diseases of the Skin," 3d ed., p. 172—these cases were originally reported as xerodermia pigmentosa. *Lancet*, vol. ii. (1888), p. 33. Unna, *Monatshefte für prakt. Derm.*, August, 1889, p. 108. Handford, *Illustrated Med. News*, vol. 1889, with good colored illustration of phase Bazin described. *Brit. Jour. Derm.*, vol. iv. (1892), p. 128,—a good abstract of Buri's case, with comments by Brooke. C. Boeck, *Archiv f. Derm.*, vol. xxvi. (1894), p. 23 (four cases). J. T. Bowen, *Jour. Cut. and Gen.-Ur. Dis.*, vol. xii. (1894), p. 89, with histology. L. Brocq, *Annales de Derm.*, 3d. ser. vol. v. (1894), p. 1133. Mibelli has also published a case with histology, *Monatsh. für Derm.*, vol. xxiv. (1897) p. 87.

give the aspect of antecedent smallpox. When the sero-pus is abundant the crusts are thick and yellow, like impetigo. Successive crops prolong the eruption for months, and recurrences from change of temperature are frequent. Arthritic symptoms often precede the eruption."

General Description.—The disease generally begins in the first, second, or third year of life, though it may be later. The eruption develops chiefly on the uncovered parts, and is generally preceded by burning or pain, fullness, but not itching, of the region attacked, and by some general discomfort, anorexia, sleeplessness, etc. Then the red spots appear, and on these, rounded vesicles develop singly or in groups like herpes. These vary in size from a millet seed to a large pea if discrete, or they may coalesce into an irregularly outlined, flattish bulla; the redness remains as an areola. These lesions may follow three courses: the vesicles may dry up in a day or two, leaving a thin scab; or they may rupture and leave a yellowish crust; or the larger vesicles sink down, and dry in the center into a thin red scab, surrounded by a ring of fluid, and may enlarge slightly in this form, and closely resemble a vaccination vesicle, having even dissepiments, so that a single prick does not empty it. It is to this phase that Bazin's name applies. In either case, after the scab has separated a reddened, slightly depressed scar is left, which eventually gets white, but is indelible, so that the patient looks as if he had had smallpox. Occasionally the lesion is arrested at the erythematous stage, and then scarring may be avoided, but it is generally a very marked feature. The individual lesions develop and decline in three or four days, but the time of the falling off of the scab is variable according to its depth. The whole attack lasts from two to three weeks, as all the groups do not develop simultaneously, and all phases may sometimes be seen together. Itching is never a prominent feature. The favorite regions are the face, especially the cheeks and nose; the ears, which are so severely involved as to be often reduced to mere cicatrized gristle; the neck, especially at the sides; the back of the hands; and less frequently the extensor aspect of the arms and forearms, and even the legs. Other regions are occasionally involved, and it has been pretty general, but with only a sparse distribution of the diseased foci. The patient is liable to recurrence, from spring to autumn in-

clusively, few attacks occurring after October and before February. The worst are in the hot months, the sun being a powerful developing factor, and the wind almost as irritating, the eruption often breaking out a few hours after exposure. The attacks get milder at puberty, and generally cease by the time the patient is grown up.

Variations.—While the above is the type there are many departures from it. In a lady of twenty-two sent to me by Dr. Blake of West Wickham, the disease began in April, at the age of thirteen, and subsequent attacks in the summer and spring. In four of the attacks the lesions suppurated, and foveated scars were abundant all over the face except round the mouth and chin. The nose and ears were much disfigured by the scarring, the hands were red, swollen, and scabbed, as if from broken chilblains, which they resembled closely in the winter. The knees and elbows were involved during a winter at St. Moritz. The eruption was worse at the periods. White of Boston * reports two winter cases, but they were not quite typical. Eosinophilia eight to fifteen per cent. was present. Colcott Fox's † case of vesicular recurring winter eruption is analogous. McCall Anderson ‡ had two male cases with a pigment allied to uro-hemato-porphyrin in the urine. In another case of Fox's, a girl of nine, in whom the eruption had recurred every spring and summer from birth, clear vesicles which left scars like those of variola were localized to the face, ears, upper part of the neck, and when at its worst the hands also.

Etiology.—The earlier cases were all boys, but fuller experience has shown that sex has no influence. Most have commenced in early childhood, generally under three years, but there are a good many exceptions, and it appears that several of the female cases have had a late commencement. Boeck's case began at twenty-six, Van Dort's at eighteen, and both Jamieson's case and one of mine began at thirteen.

Nearly all have their attacks worst and most exclusively in the summer, but a few, like my case, have been worse in the cold weather; not only sun, but artificial heat and cold winds

* *Amer. Jour. Cut. and Urin. Dis.*, vol. xvi., 1898, November.
† *Brit. Jour. Derm.*, vol. x. (1898), p. 410.
‡ *Ibid.*, p. 1.

are efficient excitants, and in one of Unna's cases, cold and sea-baths would produce an attack. Three brothers of one of Unna's cases were said to have suffered in the same way, but it must be admitted that Unna's cases differ somewhat from the others in several respects, one important difference being that the vesicles and bullæ were quite superficial and left no scar, and often the lesions stopped short at an early stage, or remained as papules.

Pathology.—This is unknown; it is presumably a vaso-motor neurosis, and a congenital susceptibility to external irritation may be assumed, but this does not take us very far. That it is not merely the chemical action of the sun's rays analogous to Röntgen-ray burns is shown by the fact that other agents will produce it.

Diagnosis.—The most striking features are the onset in early life, and the annual recurrences in the warm season of the year, especially after exposure to the sun and wind. The lesions occur symmetrically on the exposed parts, are vesicular in type, single or herpetiform in distribution, with a tendency in the large ones to dry from the center towards the periphery, and for all to leave indelible scars. There are only a few scar-leaving eruptions which could give rise to error, viz., strumous disease of the skin, lupus vulgaris, lupus erythematosus, and syphilis. The symmetry of the scarring would at once show that it was not strumous or lupus vulgaris, and while this would not be true of lupus erythematosus, in which, too, the ears are often involved, that disease rarely occurs in childhood, is generally worse in the winter, never has perfectly free intervals, and of course never develops with vesicles after exposure to the sun or wind. Hutchinson and Jamieson see a resemblance to xerodermia pigmentosa. The points of resemblance are the onset before three years old, the malign influence of the sun, and the distribution on uncovered parts; the last point of resemblance is more apparent than real, as the distribution of xerodermia pigmentosa is very exact, accords with that of many other diseases, and extends beyond the area of exposure and corresponds with a vascular area governed by certain vaso-motor centers, while in hydroa vacciniformis the area of disease rarely extends beyond the parts exposed; other differences are:

Hydroa Vacciniformis.	Xerodermia Pigmentosa.
Course intermittent.	Slowly progressive.
Tends to improvement and spontaneous cure.	No tendency to improvement, but to malignant growths and death.
Lesions are vesicular and leave scars from inflammatory destruction.	Lesions are pigment spots, flat warts, atrophic scarring, telangiectases and new growths.
Lesions are excited by sun and other atmospheric influences.	The sun has no special influence after the first freckle-like outbreak, and even then there is no proof that it is due to the sun.

Pustular syphilids in the secondary stage might easily be mistaken for it, but pustular eruptions only occur in severe forms of syphilis, would not be limited to the exposed parts of the body, and other signs of syphilis, past or present, would certainly be present in such a case; then the history and date of onset of the two diseases would be quite different, and there would be no annual summer recurrences. If cases like those of Unna's, in which there was no scarring and the eruption was not limited to exposed parts, are to be reckoned in the same category, the points to be relied on would be: early commencement, annual summer recurrences, especially after sun exposure throughout childhood, the rash consisting of slight pustular erythema and non-suppurating bullæ or vesicles, painful but not pruritic, with slight nervous and digestive disturbances, such as anorexia and sleeplessness, gradual spontaneous tendency to amelioration at puberty, and cure at or before twenty-five years old.

Prognosis.—This is unsatisfactory. All that can be promised are intervals of freedom in the cold weather, with lessened severity at puberty, and, with a few exceptions, cure at adult age.

Treatment.—The prophylactic treatment is obviously to guard the patient from exposure to the sun, and even artificial heat on the one hand, and against cold or boisterous winds on the other. All irritant applications to the skin should also be

avoided. Internally, as in other recurrent bullous eruptions, arsenic should certainly be tried, and in one of my cases salicin 15 grains three times a day had a marked controlling effect. If these fail, quinine or belladonna, or the two combined, are worthy of trial. When the eruption is out I should puncture each vesicle as early as possible, and apply iodoform powder, or paint on a solution of it in ether, and thus hope to avoid subsequent scars. Unna's second case derived benefit from ichthyol soap.

After rupture of the vesicles or bullæ the crusts should be softened in carbolized oil 1 in 40, and the exposed surface dressed with acidi borici gr. 20, iodoformi gr. 5, creolini ♏v, adip. benz. ʒj, ft. ung. Zinc and ichthyol and zinc and resorcin pastes are recommended by Buri and Brooke. Applications to cut off the actinic rays, such as tannate of silica, watery solution of bisulphate of quinine, with glycerin and curcuma, have been tried by Unna without success.

DERMATITIS RECURRENS (A) ÆSTIVALIS AND (B) HIEMALIS.

These eruptions are etiologically allied to Hydroa æstivalis, but are morphologically different.

There appears, however, to be no essential difference in many of the cases whether they come out in summer or winter. Hutchinson first described **Recurring Summer Eruptions** under the name of Summer Prurigo,* which now he himself admits is inappropriate, as the itching is not the most prominent symptom in all cases, but there is a group to which that title is sufficiently suitable.

The eruption begins in infancy or childhood, seldom after puberty, and recurs until adult life; nearly all cases get well between twenty and thirty. In most cases the recurrences are chiefly in the summer, the patient being free, or almost free, in the winter; in a few cases of a similar morphology the reverse is the case. In the one set the sun's rays are the chief exciting

*Sydenham Society's Atlas, Plate XXXVIII., and clinical lecture on "Summer Prurigo." Hutchinson's "Rare Diseases of the Skin," p. 126, *Clin. Soc. Trans*, vol. xxii. (1889), p. 82. "A Clinical Study of some Winter and Summer Recurring Eruptions," by H. Radcliffe Crocker, *Brit. Jour. Derm.*, vol. xii. (1900), p. 39.

factor, even sometimes without direct exposure, while cold winds also produce the eruption, but in a minor degree. In the other set the cold of winter is the main cause, but direct sun exposure has also a bad influence. Thus the most sensitive subjects are scarcely ever free for long together.

In most instances the eruption is confined to the face, neck, and upper extremities, and is always most developed there; but in the most strongly marked cases it affects the whole body surface, except the palms, soles, scalp, and flexures. It tends to improve when the patient reaches puberty, unless it has begun later than usual, and some of the cases have got quite well when adult life was reached.

In the majority of cases the eruption is papulo-vesicular, but some are vesiculo-pustular and others papulo-erythematous. In the commoner class of cases the eruption consists of pale red conical papules, and in the center of some are minute collections of clear fluid resembling an abortive acne. They do not, however, tend to become pustules, but generally leave behind minute shallow scars. Slight edema of the affected limbs may occur at the height of the attack. The papules itch moderately at night, and the scratching may slightly modify the eruption, producing a small amount of scabbing at the apex of the papule. When the disease is of long standing the scars of successive attacks may produce a general mottled appearance of the surface. In two sisters under my care for six years one began at the age of seven, the other when nineteen. The eldest got well when she was twenty-six; the younger was much better at the age of twenty-one. In neither was there any scarring, but the itching was sometimes rather severe.

In other cases the papules are broader and flatter and the vesicles larger, from a millet seed to a hemp seed. In others, again, the lesion is nearly all vesicular except a narrow areola, while sometimes the vesicles may become pustules. Again, the vesicular element may be suppressed and only erythematous papules, conical or obtuse, be present. Diffuse erythema and diffuse urticaria has recurred in a similar way. Cases showing other variations are described in my paper, and also pustular and erythematous eruptions evidently belonging to the same category, but coming out in cold weather and being in abeyance during the summer.

In the **summer prurigo** type, in the great majority of cases, the eruption is on the face, where it is worst, the upper part of the neck, the ears, and slightly on the back of the hands and forearms. It consists of convex papules, pale red, an eighth of an inch across, and from scratching they often have a small scab at the apex. (In several cases under my care it has begun at nine or ten years old.) The itching is often severe in the summer, but the eruption does not itch much in winter, and the scabbing is then absent and the papules paler and less prominent. Although closely crowded together, they are almost always discrete, and except for position, remarkably like true prurigo.

Etiology.—This is obscure. Both sexes are liable to it, and the disease is one of infancy or childhood. One case followed measles; one followed shortly after menstruation (æt. eight years). In two of my cases digestive disturbances would sometimes determine an attack as well as sun and wind. In another, a boy, the eruption began soon after a dog-bite on the end of the nose. Two of them began in adult life. In one, a farmer, it commenced when he was twenty, and it had lasted fourteen years when I saw him; the eruption began with itching and was followed by blisters. In another, a lady, it began at twenty-four, and was determined by exposure to sun and wind. The eruption came out as a small blister with great irritation, and dried up, but the spot lasted six weeks.

Pathology.—All these eruptions appear to be of angio-neurotic origin, and a large proportion of the cases show a congenital predisposition or vulnerability. The variation in the morphology depends on the idiosyncrasy of the patient.

Diagnosis.—The disease resembles hydroa æstivalis in being a disease of early life which recurs every summer, and tends to improve as the patient grows up. The limitation of the eruption to the exposed regions is less absolute, and the subsequent scarring is very slight in comparison, while itching is more marked. The eruption is more variable in its characters, and vesiculation, if present, is on a much smaller scale, a pin's head to a hemp seed being the usual range. There is no tendency to group. The summer prurigo cases differ from true prurigo in not commencing until about nine or ten, in their localization,

and being worse on the face where prurigo is least developed, and in being always aggravated in the summer.

Treatment.—Most of Hutchinson's cases improved under arsenic, though some required doses of six or seven minims. Locally, a lead and mercury ointment was successful in giving relief. Two of my cases improved most by attention to the digestive organs, regulating the bowels with alkaline or acid stomachic mixtures as required. The elder had small doses of arseniate of soda at the last, added to the alkaline laxative, with benefit. In the younger and more obstinate case combating the chronic constipation was the chief element of success. Several of the other cases had disordered digestion, but where this is absent arsenic should be tried. Salicin in one of my cases had a controlling, but not a curative, effect. In the summer prurigo type a solution of protargol, five grains to the ounce, painted on two or three times a day, gave most relief to the itching, and therefore prevented scratching and its aggravations; greasy applications always increased the itching in my cases. Ichthyol internally seemed to do some good.

B. Dermatitis hiemalis was first described by Duhring, but Corlett * has written a good paper on it, and described it as follows: "The eruption is characterized by variously-sized round, or as involution proceeds horseshoe-shaped patches, which are slightly, sometimes markedly, thickened, having an abrupt, well-defined margin, and a dusky red or slightly erythematous color. At first vesicles are present, which easily rupture, leaving denuded, weeping, irregular pin's-head to lentil-sized surfaces, whose color is perceptibly stronger than the surrounding patch, and may be likened to a raw ham tint. The disease at this time often presents a striking resemblance to herpes. Later the patch takes on a faded rose-colored hue, and becomes covered with a thin layer of adherent scales, when it might easily be mistaken for lupus erythematosus, but it does not spread at the periphery. This may mark the subsidence of an annual attack, or after many years the eruption may assume this form. The distribution is on the back of the

* "Cold as an Etiological Factor in Diseases of the Skin," by W. Corlett. *Jour. of Cut. and Gen.-Ur. Dis.*, vol. xii. (1894), p. 458. Colored plate. Also *Trans. Third Inter. Cong.*, 1896, p. 622.

hands, occasionally of the feet also." I have only seen one case which at all corresponds to this description, but the winters in America are much more severe than here. Nothing except protection from exposure to cold appears to be of any avail.

Acrodermatitis pustulosa hiemalis is the name I have tentatively given to a disease of which I have seen three instances, and which presents several resemblances to Barthélémy's folliclis.

The lesions are all excited or kept up by cold, affect the hands only, especially about the knuckles and sides of the fingers, and take the form of indolent indurated papulo-pustules, isolated, and few in number at a time; but the disease as a whole persists by a succession of lesions throughout the winter and early spring.

They begin as hard, brown, large pin's-head points, but later as if there was a "thorn in the flesh"; if pricked early, watery fluid issues, but later matter forms round the peg, and the whole is on a red raised base the size of a large pea. The central portion comes away and leaves a hole which heals very slowly and leaves a scar. A few form indurated red nodules without suppuration. These cases resemble folliclis in the character of the individual lesions, in a slight tendency to group, and in leaving punched-out pigmented scars. In one of my cases there was evidence of tuberculosis, which has been present in several cases of folliclis. The differences are their limitation to the fingers, their association with a feeble circulation, and being excited by cold weather.

In folliclis the lesions are in large numbers, chiefly on the limbs, especially at the joints, and while they attack the hands, the palms and backs are largely affected as well as the fingers. Still, as the lesions appear to be identical, it may be only a winter variant of folliclis. C. W. Allen * of New York records a case of somewhat similar characters. It attacked the hands and feet, including the palms and soles, but did not extend above the ankles and wrists. The lesions began as erythematous spots, which soon became nodular, and in a few weeks or months they underwent a central necrosis and left a depressed

**Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xvi. (1898), p. 227.

cicatrix. There was evidence in the man of gout, but not of phthisis.

In December, 1891, Cavafy * showed a case at the Dermatological Society of a young woman, æt. twenty-one, with the "chilblain circulation," but who seldom had chilblains, but every winter for several years was subject to an eruption on the fingers of indolent inflammatory lesions, slightly vesicular at first, but which were a little later convex, split-pea-sized, red papules with a solid horny plug in the center, giving them a somewhat warty appearance; they had no vascular points in the center, and went away entirely in the summer. This is evidently the same affection as that just described.

The administration of nitro-glycerin tabloids and rubbing in unguentum iodi produced improvement in two of my cases, and one seemed to be cured by taking thiol gr. v. in pill three times a day for a considerable time. Vasogen iodin would probably be an improvement on unguentum iodi.

IMPETIGO HERPETIFORMIS (Hebra).

Definition.—An inflammatory disease, characterized by the formation of groups of small pustules, attended with severe constitutional symptoms.

No case of this disease, that I am aware of, has been recorded in England, and most of the American cases are regarded as pustular forms of dermatitis herpetiformis.

Heitzmann's and Fordyce's are possibly true examples of this rare and formidable disease, but their identity is by no means unchallengeable; at the same time, with such a rare disease we are apt at first to form too narrow a conception of its clinical possibilities, which often have to be widened as experience grows.

Whitehouse's † case, in a male æt. thirty-nine, appears to have been of the classical type.

It is mainly to Hebra ‡ and Kaposi that we are indebted for

* Published in full in *Brit. Jour. Derm.*, vol. iv. (1892), p. 1.

† H. H. Whitehouse of New York. *Amer. Jour. Cut. and Gen.-Urin. Dis.*, vol. xvi., April, 1898.

‡ Hebra's Atlas, Lief. ix., Plates IX. and X. Reproduced in Kaposi's Hand Atlas, Plates CXXVII. and CXXVIII., additionally illustrated in Plates CXXIX. to CXXXIII.; CXXXII. was in a male.

what we know of this disease, and from their account, founded on five cases, and from a monograph by Kaposi,* the following description is taken.

Symptoms.—The eruption consists of pin's-head-sized, superficial pustules, sometimes isolated, but generally densely crowded into groups half an inch across, often circular in shape, the central pustules of which dry up after a time, while fresh ones are formed at the periphery; by this means, and by coalescence with neighboring groups, large areas are implicated. The contents are pustular from the commencement, at first only opaque, but later greenish-yellow, until they dry up into dirty-brown crusts, which enlarge by the accretion of other pustules at the periphery. The commencement of the eruption is on the inner side of the thighs and groins, round the navel, on the breasts, in the axillæ, and the oral mucous membrane, where it may even precede the skin eruptions. As fresh groups and isolated pustules are continually developing in crops, the whole body surface may be involved in three or four months; the skin is then hot and swollen, with crusted, fissured, and excoriated patches, here and there still bordered by pustules; and even on the tongue, in one case, were circumscribed gray plaques depressed in the center.

Rigors and high fever precede the onset of the eruption and of each outbreak, which are immediately followed by a fall of temperature, so that the general symptoms are those of a remittent fever, with dry tongue, intercurrent rigors, loose bowels, high-colored urine, with increased urea, but no albumin until late in the disease. It has ended fatally in all the female but one, of Kaposi's cases, and in this there were many relapses, while two recovered after several attacks, but succumbed to a later one. Schultze's and some others of the milder type have also recovered. In nineteen cases the victims were pregnant women, and delivery had no influence for good or evil on the course of the disease. In some cases endometritis and peritonitis were found post mortem; the others afforded no expla-

* "Impetigo Herpetiformis," Kaposi, *Viertelj. f. Derm. u. Syph.*, vol. xiv. (1887), p. 273; highly illustrated with colored plates. See also "De l'Impétigo Herpétiforme," Dubreuilh, *Ann. de Derm.*, vol. iii. (1892), p. 353, who reports another fatal case in a male æt. fifty-three, and gives a general review and list of cases—seventeen in all. About a dozen cases have been added to this number.

nation of the cause of death. The twelfth case, under Kaposi, was a young man. The disease began apparently as a severe intertrigo, with great general disturbance; it spread over the abdomen, and smaller patches came elsewhere; he gradually sank, and post mortem there was general peritonitis, with effusion.

Dubreuilh's, Whitehouse's, Tommasoli's, Pollock's and Rille's, and Gunsett's cases were also men; Gunsett's case recovered. Whitehouse's case and Breier's cases were preceded by what appeared to be only severe eczema, and Rille's, a lad of seventeen, by an iodoform dermatitis. This rather favors Hallopeau's view that there is a purulent infection of the skin. Gunsett's case,* from Wolff's clinic, was a man æt. thirty-three. The disease began suddenly with rigors and fever, the eruption began on the face, then attacked the mouth and pharynx, and then the groins; thence it spread all over the body except the scalp. Under the administration of quinine he recovered in about two months from the onset.

All the cases of Kaposi's type are singularly alike in the development and appearance of the eruption, except that in a few the pustules have been a little larger than he described. In several they have reached the size of a lentil.

If cases such as Heitzmann's and Fordyce's are to be brought into the same category, then a somewhat wider symptomatology will have to be adopted.

The pathology is doubtful. Probably it is a disease of septic origin, though this has been actually demonstrated in only about one-third of the cases, and Auspitz has called it **Herpes pyæmicus.** Neumann considered it to be a metastatic pustulosis. Duhring at one time regarded it as a phase of dermatitis herpetiformis, but has modified his views somewhat since the publication of Kaposi's paper, and acknowledges that even Heitzmann's case does not correspond with Kaposi's descriptions.

Unless Kaposi has given too narrow a conception of the dis-

*Gunsett, *Archiv f. Derm. u. Syph.*, vol. lv. (1901), p. 337. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 402. He gives references to all the above-mentioned cases and others, 28 in all, but some are not genuine cases. Out of the 28, 19 were puerperal women, 1 was not pregnant, 8 were men. Some of the male cases recovered.

ease, the diagnosis would not offer much difficulty; successive crops of small pustules in spreading groups, with severe rigors and fever, especially if in a pregnant woman, would be sufficient to characterize it. It resembles dermatitis herpetiformis in the groups, the tendency to form circles and to spread peripherally, but differs from it in the lesions being very small and pustular from the beginning, which is very exceptional in dermatitis herpetiformis,* in the absence of erythema and of severe pruritus, and in the presence of severe general symptoms, with a fatal result in nearly all cases. In the last particulars, in the positions most involved, and in the affection of the oral mucous membrane sometimes preceding the skin lesions, it recalls pemphigus vegetans. It should be compared with Hallopeau's cases of pyodermites végétantes, with very similar eruption, but mild course.

Treatment.—None has been successful hitherto; continuous baths, where practicable, would give relief and lower the temperature. Antiphlogistic treatment has been tried in vain. I should be inclined to treat it as pyemic, and give five to ten grains of hydrochlorate of quinine every four hours, and a highly supporting dietary, with alcohol in some cases.

PSORIASIS.†

Deriv.—ψώρα, the itch.

Synonyms.—Lepra; Lepra alphos; Alphos; Psora; *Fr.*, Psoriasis; *Ger.*, Schuppenflechte; Psoriasis.

Definition.—A chronic inflammatory disease, characterized by dry, red, primarily roundish patches, covered with imbricated, silvery, adherent scales, occurring chiefly on the extensor surfaces.

* Maret, in his "Inaugural Thesis of Strasburg," 1887, and Du Mesnil and Marx, *Archiv für Derm. und Syph.*, vol. xxi. (1889), p. 657, and in vol. xxiii. (1891), p. 723, publish cases as impetigo herpetiformis, with relapses, but favorable course. If their view is correct Duhring's contention would be established, but further evidence is required before a decision can be arrived at.

† *Literature.*—Author's Atlas, Plates XXIII. to XXVIII., illustrating the chief varieties, and Plate XC., Figs 2, 5, 6, 7, as it affects the nails. Syden. Soc., Plate XIV., which shows a high degree of crusting, and Plate XVII., as it affects the palm and nails, are especially good.

Psoriasis is in most cases easily recognizable, and one of the most common diseases of the skin. It is the fourth in frequency in private,* and the fourth in hospital practice, and forms about seven per cent. of all cases in this country, but in Vienna and in America it appears to be less common than in England and France, viz., two and three and one-half per cent. respectively.

There is only one kind of true psoriasis, but many qualifying terms have been given to the variations in its clinical aspect, founded chiefly on the stage of development, its localization, and the acute or chronic character of the inflammatory process, and occasionally on some complication or exaggerated feature.

Symptoms.—A typical case has well-marked characters. Symmetrical in the main, it selects, in the vast majority of cases, the extensor surface of the limbs, especially the tips of the elbows and knees, and next in frequency the scalp and trunk. It consists of patches of very variable size, round or oval when small, but irregular when large; they possess sharply defined borders, so that they stand out prominently from the healthy skin, and are covered more or less completely by imbricated silvery or grayish-white, scaly, adherent crusts, placed upon slightly raised plateaux of a bright red color at first, but in cases of long standing of a duller hue. This is best seen when the scales are picked off, which exposes to view a number of bright red dots, which bleed easily, and are the apices of the hyperemic papillæ. A lens is often necessary to see these red points, and the scales must be completely removed.

The eruption is dry from the commencement, itches more or less, according to its development and the activity of the hyperemia. But the irritation is usually much less than in eczema, and there is no pain unless the eruption is over the joints and the movements produce fissuring. In the majority of young cases the patients appear to be in good health, often with bright, clear, ruddy complexions, justifying Hebra's dictum, that "psoriasis is a disease of the healthy," but, like most aphorisms, this must not be taken too literally, and especially if the first attack occurs after thirty.

* In my private practice it is six per cent. and in McCall Anderson's ten. Bulkley gives four and five per cent. for his public and private practice respectively in New York.

Primary Plaque.—In a considerable proportion of cases, if the mode of development of the first attack is investigated, it will be found that the disease commenced in one or two patches close together, which slowly enlarged and coalesced into a plaque, which remained single for weeks, months, or even years before multiplication took place. This may occur in two ways, either slowly, the patches coming out singly and unsymmetrically and usually not far from the original patch, or more rapidly and then symmetrically in distant points, such as the elbows and knees, or with generalization. This mode of development is like that of pityriasis rosea, but is not observed in recurrences, which may be widespread and symmetrical from the first. Once established, the course is chronic, varying, when untreated, from months to years; but there are nearly always remissions or intermissions. If removed entirely, its recurrence is only a question of time, some patients having one or two attacks a year, while others go free for much longer intervals and a very few cease to recur at all. The eruption leaves only a transitory redness, or slight pigmentation, unless the patch has been very chronic, is below the knee, or has been treated with arsenic, which often produces dark staining on the site of the patches.

Variations.—According to the intensity of the disease, the size, shape, and stage of the patches, and the amount of scales upon them, etc., the earlier writers made varieties and christened them with different names. These, perhaps, are of some slight use to the specialist to express briefly the aspect of the case, but are useless lumber to the student, and are only explained here as they are still used by some writers.

Psoriasis commences as a small pin's-head-sized flat papule, which speedily becomes capped with white scales (**P. punctata**). The papule enlarges at the margin, and when about a quarter of an inch across looks "like drops of mortar on the skin" (**P. guttata**); continuing to enlarge, discoid patches of various sizes up to about two inches are formed (**P. nummularis, discoidea**). The coalescence of several patches from different centers produces large, irregular patches, or even sheets of eruption, covering the greater part of the limb or trunk (**P. diffusa**), and when all over the body **P. universalis.***

* It is probably never absolutely universal, but Hebra seemed to think

The disease may stop for some time, or never go beyond any one of the stages above mentioned.

Involution of the disease always commences in the center; thus in a round patch a ring is produced **(P. circinata)**; when it happens in a compound patch, gyrate lines are formed **(P. gyrata).*** As the healing process progresses, the ring gets narrower, then broken, and, finally, the broken parts disappear. In this case, then, it is an indication of involution, but it may occur also in evolution upon the trunk, and form rings and festoons from the first, apparently following the normal arrangement of the hair follicles; the component papules, which begin at the follicles, coalesce into rings, and these rings meeting, break at the place of contact and form festoons. In this form the disease spreads at the margin as in the patches, but involution goes on *pari passu*, and so the rings enlarge; but the strip of disease is not widened. When a healthy process sets in the evolution stops, the ring gets broken, and the whole gradually disappears. This ringed mode of development, which is rarely seen on the limbs, was called **Lepra** by Willan, a term now restricted to leprosy.

A few other names remain to be explained. Very obstinate cases, where the skin is much thickened and fissured, with large adherent scales, are **P. inveterata**; where the scales adhere so as to form much-raised, conical heaps, **P. rupioides**;† where there is a little pus underneath the crusts, a rare event, **P. empyodes.**‡

that such a condition exists. In Kaposi's Hand Atlas a case with this designation had small areas of normal skin. I have never seen a case without some intervals of healthy skin, though I have, of course, seen many cases which have passed into pityriasis rubra.

* Plate XXVII. of my Atlas illustrates an evolution eruption, and Plate XXIV. of the St. Louis Atlas an involution case of very similar aspect.

In a case recorded by Gassmann the patient had numerous circles and gyri of very small size, forming an arabesque pattern. He quotes Jadassohn, his chief, as having had three similar cases.

† I have met with an extreme instance in a child of five, in which the limpet-shell resemblance was exact in silvery adherent scales. It was not more difficult to cure than the usual form. In a case reported by Gassmann with rupioid eruption on the trunk, on the scalp the crusts formed veritable horns. An extreme case was seen by Kaposi with verrucose tumors on the palms and soles, and the scalp was almost bald with tumors.—*Annales de Derm. et de Syph.*, vol. iv. (1893). p. 109.

‡ A case of Hallopeau's simulated bullæ in some of the lesions.

In **P. acuta** there are bright red patches, less defined at the margin than usual, or there may be large areas; the scales are thin and papery, being thrown off so rapidly that they have no time to aggregate into masses. The part is hot and tender, itches severely, and very little irritation will produce discharge constituting the **P. eczémateux** of Devergie, which is seen mainly on the forearms and legs. **P. acuta** sometimes goes on to pityriasis rubra.

It must be borne in mind that the usual appearances may be modified from various causes. Thus, there may be hardly any scales, owing to previous treatment, of which the patient often makes no mention until questioned. In chronic alcoholics the patches often assume a deep purplish-red color and the scales shell off easily; or, owing to the presence of unusual irritability, the patches may be scratched into an ecthymatous condition. In a case of mine with rheumatoid arthritis the crusts assumed a horny character. The disease may be arrested at almost any of the developing stages, *e. g.*, the eruption may be punctate or guttate throughout its whole course, even when the disease is otherwise so severe that every region is involved.

Position on the body also modifies the disease. When on the *scalp* it only leads to loss of hair when it is more than usually acute; as a rule, it interferes remarkably little with the growth of the hair, and the scalp may be patchily scurfy, while on the borders of the hair it is often such a bright red as to be mistaken for eczema; but the abrupt termination of the diseased area, and the absence of discharge, should lead to the right conclusion. When on the *scrotum* the skin is often fissured with much swelling, redness, induration, and thin secretion; there are tenderness, pain, and irritation.

On the *palms* and *soles* it is rare, and almost invariably associated with manifestations elsewhere; when it does occur there, raised patches with scaly crusts are seldom formed, but the horny layer is thickened in small areas, and by splitting produces whitish worm-eaten-looking spots. In one of my cases, without any eruption elsewhere, the palms were covered with small patches about a quarter of an inch across, without much thickening, and covered with a single layer of white scales. The patient had had two or three attacks; had often been accused of, and treated for, syphilis, without effect on the patches, which

got well under ordinary psoriasis treatment. One of my patients, a girl, had had several attacks of general psoriasis, which always commenced on the palms and soles with diffuse redness followed by rapid exfoliation of the epidermis.

The great majority of cases of so-called palmar or plantar psoriasis are of syphilitic origin, or else are eczema palmare. I have, however, met with one extreme instance, in which it was limited to the left hand for many years, especially affecting the palm. There were heaped-up silvery scales all over the palmar aspect, well-defined scaly patches on the knuckles and wrist, but the disease had never affected any other part except the *right* hand at an earlier period. Cavafy showed a similar case to the Dermatological Society in July, 1894. Psoriasis is occasionally unilateral even when the patches are numerous, as in Kusnitsky's case.* In Cavafy's the disease was limited to the right forearm and hand for twenty years, having begun on the palm, also a single patch may exist for a long time in the first attack, as already shown, and then there may be a rather rapid development of numerous patches.

P. Striata. It has also been seen in a band or striate form down the back of the thigh and leg, a distribution seen more frequently in lichen planus.† Hallopeau and Constensouer record one case and J. Heller another.‡ Scratching will sometimes determine a linear development. Thibierge's case § had the same distribution, and in addition the arm was affected in the course of the musculo-cutaneous nerve. Sciatica had preceded the eruption on the lower limb. He quotes Besnier, Polotebnoff, and Bourdillon for similar cases following neuralgia.

Psoriasis may attack scars, tattoo marks, vaccination scars, etc. Morel-Lavallée ‖ relates an interesting case in many particulars of a gouty man who fell on his elbows, and psoriasis developed there, as the skin was healing, and then on the palms, soles, and scalp.

* "Etiology and Pathology of Psoriasis," *Archiv f. Derm. u. Syph.*; vol. xxxviii. (1897), p. 405, plate.

† *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 1120.

‡ Heller, *Deutsch. med. Wochensch.*, 1898, No. 52.

§ Thibierge, *Annales* vol. iv. (1893), p. 1195.

‖ *Annales*, vol. ii. (1891), p. 463.

Mucous Membranes.—These are rarely involved in psoriasis. There are only a few cases recorded. Sachs's * is an example of a patch on the inner surface of the lower eyelid. Hutchinson† records a case less conclusive but with more extensive and serious lesions of the mouth, and another with symmetrical filmy patches on the tongue. Bucco-lingual leukoplakia has been several times observed associated with psoriasis, but it is due to so many causes that it cannot be proved to be due to the psoriasis. J. Schütz‡ of Frankfurt in recording two such cases gives a large number of references of psoriasis associated with lesions of mucous membranes.

The *nails* of the fingers and toes may be affected in varying degree, either alone, or more often associated with the disease elsewhere. Several are usually symmetrically involved, sometimes one, but rarely all, and it may begin at any part of the nail. Sometimes a small patch of psoriasis may be seen underneath the nail, which loses its polish, becomes opaque, thickened, pitted, furrowed transversely, of a dirty fawn or brown color; the nail splits, breaks, especially at the end, and may get detached from its bed from the accumulation of epidermis beneath it; or the disease, as Mr. Hutchinson well describes it, may "begin by a little patch of discoloration under the free corner of a nail, and the patch extend down one or both sides to the root."§ He regards this as absolutely characteristic of the disease; but although most commonly due to psoriasis, it may occur from other causes.

The disease may remain limited to this strip of nail, but more often affects the whole to a greater or less degree. All the above characters vary in intensity, from a slight pitting without discoloration, up to enormous thickening and raising up of the nail from its bed even to half an inch in thickness, as in the case of palmar psoriasis just described, a case of which it may be mentioned that all the members of the Dermatological Society concurred in its being of non-specific origin. It is probable that those cases which begin at the distal end are an

* Internat. Atlas of Rare Skin Diseases, Lief. ix., Plate XXVII., Fig. 2.

† *Archives*, vol. ii. (1890), p. 160; also vol. iv. (1893), p. 315.

‡ *Archiv f. Derm. u. Syph.*, vol. xlvi. (1898), p. 433.

§ "Diseases of the Nails and their Significance as Symptoms, and Discussion." *Trans. Derm. Soc. Great Britain and Ireland*, vol. v. (1899–1900), p. 1.

auto-inoculation, from scratching the body patches, but that it may also attack the matrix from within, and then produces pitting and other changes, beginning at the proximal end.

Danlos * records a case of an alcoholic woman of fifty-two who had had previous attacks of the usual distribution, but in the last it was almost limited to the ungual phalanges of the fingers and toes, affecting both palmar and dorsal surfaces, and all the nails were ultimately shed with imperfect renewal on the toes, but the finger-nails grew healthily.

Sweat duct Psoriasis.† The lesions are for the most part only one-eighth of an inch in diameter, but may cover a great part of the trunk and limbs. Although acuminate at first, they soon flatten out into slightly scaly spots. The scales are sometimes not perceptible until the surface is scratched with the nail. This variety of P. punctata is not very rare, but has not, I believe, been previously differentiated.

Follicular Psoriasis is a rare form of punctate eruption situated at the hair follicles. The papules may be millet-seed to hemp-seed-sized, with scaly top, as in a case shown by S. Mackenzie ‡ to the Dermatological Society, or somewhat larger, as in a very remarkable case of mine.§ In both of these cases the eruption was densely crowded and universal. They are lichenoid in general aspect, but do not coincide with the psoriasiform and lichenoid exanthem of Neisser, Jadassohn, etc., described under Lichen Variegatus. Tenneson regards lichen acuminatus as a follicular psoriasis, but the general history and course are different. Kracht showed a case at the Moscow Dermatological Society in 1891, in which funnel-like horny pegs were inserted into the follicular orifices.

Complications and Sequelæ.—In a young man under Kaposi, for over thirteen months *pustules* in enormous numbers

* *Annales de Derm.*, etc., vol. i. (1900), p. 737.

† Author's Atlas, Plate XXV., Psoriasis Punctata, is an illustration. I have, since that was published, been able to establish the anatomical position of the lesion round the sweat duct.

‡ *Brit. Jour. Derm.*, vol. xii. (1900), p. 17.

§ Author's Atlas, Plate XXVI., Psoriasis Follicularis. Plate CCLXXXIV. Psoriasis Striata, in Kaposi's Hand Atlas, seems to be a similar case,

were constantly appearing in spite of treatment; a local irritation always determined an outbreak. In exceptional cases *deep pigmentation* accompanies and follows psoriasis where no arsenic has been taken. I have met with one such case in a man with general psoriasis, which seemed on the point of developing into a pityriasis rubra, but was checked in time; the whole of the eruption was a deep sepia tint, which remained after the psoriasis was cured. Brocq met with a case of pity-

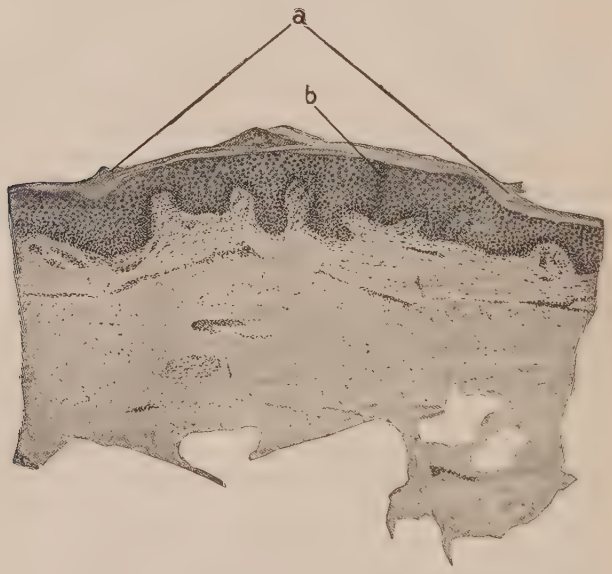


Fig. 21.—*a*, Pin's-head papule of sweat pore Psoriasis; *b*, sweat pore. × 1 in. Ross 6 in. Tube.

riasis rubra which became suddenly deeply pigmented, and Plate XXXIV. of Neumann's Atlas is called *psoriasis nigra*, but there it is in small circumscribed patches.

Hallopeau* records the converse of this, *permanent achromia* being left on the site of the patches. I have also met with a case in a child resembling leukodermia. Nielssen also men-

* Hallopeau's first case was in 1892; in 1898 he had a second case, æt. eight years. *Annales de Derm. et de Syph.*, vol. ix. p. 690. In a discussion at a congress at Munich, in 1899, Rille said he had seen ten cases, but some of these must have been due to chrysarobin treatment *Annales*, vol. ii. (1901), p. 80.

tions leukodermia after psoriasis, and after both arsenic and large doses of iodid of potassium. Temporary achromia after chrysarobin treatment is well known.

Superficial scarring has remained on the site of the patches in very rare instances. I have seen one case following chrysarobin treatment. Hutchinson * records a case in which slight scars were always left after each attack, but they were not permanent, but relapses never attacked the old sites, and the scale crust was very thin and adherent, so that he never shed any scales. The disease was amenable to arsenic. *Keloid* also may occur; in December, 1891, Anderson showed to the Dermatological Society a boy, æt. eleven, in whom keloid had developed on the site of what appeared to be patches of ordinary psoriasis, to which he had been subject for years. They were most of them in herpetiform groups, from a pea to a bean in size, flat, smooth, white, and only slightly raised. The small ones looked like morphea spots, but microscopically had a keloid structure; the larger ones had a keloid aspect also. They were not in any way traceable to irritating applications, which Besnier † believed to be the cause of Purdon's ‡ case of keloid following psoriasis.

Papillary Hypertrophy which may take a warty form is much less common in psoriasis than it is in lichen planus. I have seen it on the leg in an elderly man, and Morris had a case associated with striate ichthyosis hystrix, on the arm of a young man. Hutchinson § had an extreme case on the legs of a man of seventy-six, which got well under the application of creasote and Martin's bandages, and opium internally, to which the cure was ascribed, but I should attach it chiefly to the pressure of the bandage. Kaposi's ‖ case was very remarkable. There was verrucose development on the patches all over the body from the first.

Epithelioma followed this warty condition in the cases of

* *Archives*, vol. iii. (1892), p. 57. Also two cases in vol. i. (1890), p. 273.

† Kaposi-Besnier, vol. i., note, p. 559.

‡ *Jour. Cut. and Ven. Dis.*, vol. i. (1883), p. 203.

§ *Archives*, vol. i. (1890), pp 374 and 375.

‖ Reported in *Annales de Derm. et de Syph.*, vol. iv. (1893), p. 901. Plate CCLXXXIV. of his Hand Atlas probably represents this case; the face was severely affected.

J. C. White, Hans Hebra, Pozzi, Cartaz and Hartzell,* etc. It occurred on one or more plaques of psoriasis, but apparently not preceded by papillary hypertrophy. It must be borne in mind that epithelioma also occurs on the warts from long-continued arsenical treatment for the psoriasis. In one of my cases, a man of seventy, the keratosis had been present fifty years, and one of the warts became papillomatous, and another epitheliomatous. Gassmann † records the case of a man who, having warts on his hands and a pruritic psoriasis, had an acute development of warts on the trunk and limbs on the site of the psoriasis lesions.

Children.—Psoriasis in children differs in no way from its manifestations in adults, except that the patches more often remain small; the disease is seldom so extensive or so severe, the face is more frequently and exclusively affected, and the elbows and knees often escape, but J. Schütz had a case of thirteen months old with both knees affected. I have rarely seen anything approaching to a general psoriasis in a child, but in G. F. Elliot's ‡ case, which began at thirteen months old, when he saw it, æt. eighteen months, it had spread all over the body, including the palms and soles. The eruption was cured in a fortnight with arsenic internally and 30 per cent. of ammoniated mercury ointment externally. No evidence of syphilis in the infant or its family history. An hereditary history is, I think, to be more frequently obtained when the disease begins in early childhood.

Nielssen says the eruption lasts longer in children than in adults, but that is not my experience.

Etiology.§—*Age.*—Psoriasis may occur at any age after five

* Hartzell gives a summary of previous cases. Reprint in *Syd. Soc. Selected Essays*, vol. clxx. (1900), p. 259.

† *Archiv f. Derm. u. Syph.*, vol. xli. (1897), p. 317.

‡ *New York Med. Rec.*, July, 1886, p. 8.

§ Nielssen of Copenhagen analyzed 616 cases, *Monatsh. f. Derm.*, October, 1892; *Syd. Soc. Trans.* He found that two-fifths began before fifteen years. Bulkley, "Clinical Study and Analysis of 1000 Cases," *Trans. Internat. Cong. Derm.*, Paris, 1889, p. 878, and "Clinical Notes 366 Private Cases," *Trans. Med. Soc.*, State of New York, 1895.

Author.—Introduction to Discussion on Etiology and Pathology of Psoriasis at Brit. Med. Assoc. meeting, 1893. Abs. *Brit. Jour. Derm.*, vol v. (1893), p. 277, with analysis of between eight and nine hundred cases.

years. It is rare under three years, and I have only seen one case under two years, but Kaposi had one at eight months, Hans Hebra at six months, Neumann at four months, Billard at three months, and Rille * showed a case at a society in Vienna where the diagnosis was not disputed, æt. thirty-eight days, and it is said to have commenced at five or six days old. In all except Hebra's case there was a family predisposition. There is no limit at the other end of the line; my oldest case was eighty-one, but Wilson had one which began at eighty-five years. Forty per cent. are said to begin below puberty. In the analysis of my private cases 72 per cent. began below the age of thirty, the numbers below 12, between 12 and 20, and 20 to 30 being practically equal; the decades 30 to 40 and 40 to 50 were also equal, 22.5 per cent. together, while the other 5.5 per cent. occurred after 50. Nielssen gave only 2 per cent. after 50. Thus in two-thirds of the cases the disease commenced between 5 and 30 years.

Sex.—In my private practice males and females were about equal, and in hospital practice females predominated as two is to one, but foreign statistics give a slight predominance to males. Probably sex as well as rank and occupation have no influence.

Season.—Psoriasis is proverbial for its recrudescence in the spring, but on the whole, recent cases are worse in the winter, and older cases in the spring. It appears to be more common in cold and uncertain climates like our own, and in Iceland the proportion is 8 per cent.

Hereditary.—It is certainly hereditary in the sense of tissue proclivity, in a considerable number of cases. Rosenthal and Bulkley found 15 per cent. hereditary; nevertheless, the children of psoriasitic parents often escape, and it is rare for all the family to have it; I have, however, known five out of a family of seven affected. Like other hereditary diseases, it may skip a generation. Except heredity, we are still in the dark with regard to the etiology of psoriasis; the patients often appear to be the picture of health, even when a large part of the body is covered. In predisposed subjects, it will, however, often be found, on careful search, that the patient, though ap-

* Rille, *Maladies Cutanées*, vol. xl. (1899), p. 385, with analysis of previous infantile cases.

parently well and complaining of nothing, is not up to his own highest standard of health. Psoriasitic women often have an attack determined by parturition or lactation; and any other depressing influence, *e. g.*, bad feeding, etc., may have the same effect. Violent mental emotion, such as fear, grief, or anxiety, has been the immediate antecedent of even first attacks in several instances,* and most authors agree that it is very rare amongst scrofulous subjects, but Bulkley disputes this and thinks one-fourth of the cases are of strumous type.

Neumann said that it did not occur in ichthyotic patients, but Jamieson observed an unmodified case in a xerodermatous subject.

Liveing considers gout an important factor, and distinguishes two classes of psoriasis, that of the young and that of the gouty; the gouty begins in adult age, is attended with more itching and less scales, and yields to alkalies and colchicum, such patients lacking the typical clear complexion. Personally, while admitting its influence in some cases, I do not assign a high place to gout as a factor, but I agree that in cases where the first attack occurs over thirty years of age, defective health, especially as regards assimilation, appears more frequently to have been a determining influence. Rheumatoid arthritis and other arthropathies are also factors, and in such cases the nails are very frequently affected, and in the rheumatoid cases there is a great heaping up of the scales at points of pressure.

Gowers relates three cases of psoriasis following the internal administration of borax in gr. 5 doses for epilepsy, and suggests that there is some etiological relation between them; they were all readily cured by arsenic. This observation is confirmed by Liveing. Boric acid from milk is said to produce a furfuraceous rash chiefly attacking the head and face, and also a circinate scaly eruption on the limbs. It is doubtful if these eruptions are true psoriasis.

Injuries, such as abrasions, sometimes determine the place of attack, and Köbner has shown that it may develop on the site of pin-pricks and Herioch that it may form on scars.

Strong irritants also appear to be excitants. One of my patients had a strong irritant applied to the patches on his back, a

* Hardy related such cases.

ring of psoriasis appeared round the patches, but at a considerable distance from them; later original patches spread near to the new rings, but did not coalesce.

Vaccination.—Several instances of psoriasis developing on vaccination lesions are on record. Rioblanc* quoted nine cases and added a tenth, a soldier æt. twenty-two. In Piffard's case bovine virus had been used. The eruption does not remain localized to its starting-point, but generalizes. Cazenave observed it on smallpox scars. On the other hand, J. Grant† of Ottawa records an instance of an extensive psoriasis being cleared off in four weeks after vaccination. It has also been observed as a sequel of scarlet fever, measles, and erysipelas on the affected skin itself,‡ and has also developed on the site of the vesicles of herpes zoster.

Contagion.—Practically it is not considered to be communicable, although from an infant with vaccinal psoriasis Destot§ inoculated himself by scarifying the skin over the deltoid and rubbing in the scales. In two days signs of psoriasis appeared on the tip of the elbows, and in a fortnight the disease was well marked. Some months later, having got rid of his attack, he took arsenic as an experiment, and whilst taking it, a fresh attack of psoriasis occurred, and every May he gets a fresh outbreak. Unna states that a nurse gave the disease to three children under her care; Méneau cites a case where the scalp of one sister was probably inoculated by the same comb as that used by her psoriasitic sister; Graves records a case apparently conveyed from master to servant; A. Cantrell records two series of cases suggesting the possibility of contagion, sisters and mothers developing the disease from another member of the family who had acquired it without any known family tendency. While such instances of themselves are not conclusive, they suggest the possibility of contagion which should be borne in mind, so as to look out for evidence: but it is not sufficient as yet to explain away heredity as Nielssen does, by assuming

*G. Rioblanc, *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 880.

†*New York Med. Rec.*, May 2, 1896, p. 627.

‡*Med. Times and Gaz.*, March 14, 1863, p. 283.

§*Jour. Cut. and Ven. Dis.*, vol. i. (1883), p. 203. Also Hallopeau's critique, *Annales de Derm.*, etc., vol. ii. (1901), p. 337, in which he considers Destot's case conclusive. I have seen one case six months after revaccination.

family contagion. Ducrey made numerous experiments to test inoculability, but failed entirely to reproduce the disease; but many admittedly inoculable diseases cannot be transmitted at will, *e. g.*, molluscum contagiosum.

Pathogeny.—This is unknown, but there are, out of many hypotheses, two theories, for each of which there is a good deal to be said.

1. That it is primarily a neurosis of the skin, either vasomotor, as Polotebnoff suggests, or that it is a tropho-neurosis, central or peripheral.

2. That it is due to an organism in the tissues probably schizomycetic, but it is almost certainly not Lang's epidermophyton.

In a practical work like this the question cannot be fully discussed. I can only somewhat dogmatically state that my view of the hypothesis that best fits all the clinical facts is:

1. That the disease is primarily due to a microparasite, which is probably very widely spread, but only grows in certain persons, and that heredity is really tissue suitability for the growth of the organism.

2. That, while the parasite is probably first planted on the skin from without, the symmetry and often rapidly widespread distribution can only be accounted for on the theory that the parasite penetrates into the circulation and is thence distributed.

An analogy is to be found in pityriasis rosea, in which a primary patch precedes the general outbreak for about ten days. In psoriasis, the disease being less acute at first, this mode of development is less easily traced, and extension is sometimes gradual when local infection is possible, and at others volcanic, when generalization through the circulation is the only theory which will account for it. Hallopeau, I am glad to find, is also an advocate of the parasitic theory, as he considers Destot's experiments indisputable. Unna's view, that psoriasis is one end of the chain of the seborrheic process, meets with little support beyond his own circle.

Pathology.—There is as much dispute about the pathology as there is about the pathogeny. The changes found in the affected skin are: (1) Those of moderate inflammation (cell exudation, connective tissue cell proliferation, and dilated ves-

sels) in the upper part of the corium, round the hair follicles and sweat ducts. (2) Enormous increase of the horny layers, from premature conversion of the rete cells. Many investigators have come to the conclusion that the process commences in the rete, and that the inflammatory changes in the corium are secondary, while others consider that the inflammation is the primary event, and the rete and horny layer hyperplasia is secondary. According to Auspitz and his followers, psoriasis is not inflammatory, but due to an anomaly of the cornification process, called parakeratosis. (3) Increased development of the rete layers, except over the papillæ. (4) Great downgrowth of the interpapillary processes, and consequent enlargement of the papillæ.

Anatomy.—The histology of psoriasis has been investigated by myself and by many observers, of whom Wertheim, Neumann, Hebra, and Kaposi on the Continent, Robinson of New York, Thin in England, and Jamieson of Edinburgh may be especially mentioned, among the older investigators, and more recently Schütz, Unna, Kromeyer, Kuznitzky, Kopytowski, Munro, etc. I will first give my original description in comparison with contemporary observers, and then show how the most recent observations modify or alter the earlier ones.

All the German investigators adopt the view of psoriasis being primarily an inflammation of the papillary layer. Robinson appears to have examined carefully all stages of the disease, and his views therefore are especially worthy of attention. He came to the conclusion that the disease begins as a hyperplasia of the rete; and Thin, from an examination of the border of a nummular patch, confirms his view, with which also Jamieson and Tilbury Fox agree. I have excised a papule no larger than a pin's head, where there was only a small cap of scales on the apex, and in the neighborhood of this papule were others, so small as to be unrecognizable by the naked eye, while the horny layers were still affected. I will state briefly what I have observed in these papules and in small patches, and point out any differences in my observations from those of others.

In a pin's-head papule (Fig. 22), the upper two-thirds of the horny layers are raised into a cone, inclosing a space between themselves and the subjacent layers, which are still closely adherent to the rete. The upper layers are, as a whole, increased in thickness and separated from each other. In some of the meshes thus formed lie round cells, which stain with carmine, and are of the size and shape of nuclei of epithelium, which they probably are. Besides these, which are comparatively few in number, there are enormous numbers of minute, circular bodies with a central dark spot, which lie in loose clusters between the separated layers, but which also exist in dense masses, lying horizontally in the still adherent horny layers below. Their appearance certainly suggests that they are organisms of some kind, and probably have a mechanical influence

in separating the layers. As to whether they are a *materies morbi* of etiological significance, or merely grow there because the tissue is diseased, I am not yet prepared to offer an opinion. Similar bodies may frequently be seen in small masses on the free surface, where there are as yet no papules. Later on the lower layers get separated like the upper, but in an earlier stage, when the papule is microscopic, the horny layers are unaffected.

The most striking changes are in the rete. There is considerable increase of thickness as a whole, except over the top of the papillæ. The

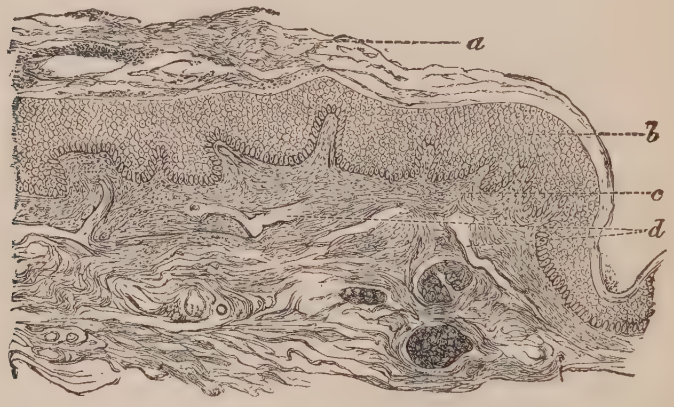


Fig. 22.—Psoriasis. A papule the size of a pin's head. × 125.

a, scaly cap; *b*, rete mucosum considerably thickened; *c*, moderate cell effusion in the papillary layer; *d*, dilated blood-vessels. The cell effusion was rather more abundant than is depicted in the woodcut.

interpapillary part is increased downward and transversely; this enlargement of their boundaries downward produces an apparent increase in the size of the papillæ. The palisade cells are, in some places, evidently proliferating, and their lower ends form fusiform projections into the papillæ. Sometimes, too, they form more than one layer. The rete cells above these also give evidence of proliferation. These changes are mostly developed in the center of the papule, and diminish toward the periphery, but do not cease for some distance beyond the papule, and are more or less visible in the most minute papules.

The papillæ appear enlarged both in length and breadth, the blood-vessels are slightly dilated, and there is moderate cell infiltration around them, all through the papillary layer. In more advanced patches the vascular dilatation and cell effusion are more marked. The elevation of the papules is mainly due to this cell and serum effusion. For the most part only the upper half of the corium shows cell infiltration; this is the greatest round the dilated vessels, especially in the neighborhood of the sweat ducts and hair follicles; and not only is the infiltration more

abundant round the hair follicles, but it often extends to their terminations in the deepest part of the corium. There is also proliferation of the cells of the follicular wall, and consequent finger-like outgrowths analogous to the interpapillary downgrowth of the rete. A hair follicle is very frequently the center of a papule. Cell effusion extends downward round the sweat ducts, and the glands also exhibit cell proliferation, blocking up the lumen of the lobules, and producing the appearance of the whole gland being a uniform mass of cells. This is more frequent in the gland than in the ducts. In some, the minute round bodies described as lying between the horny layers can be seen between the lobules of the sweat gland. The sebaceous glands are unaffected. I examined carefully the parts adjacent to the papules, and endeavored to find whether the process began in the rete or in the corium, but I could never find the rete hyperplasia without the cell effusion, nor could I find cell effusion beyond the rete hyperplasia.

Accordingly, I fail to find the proof of Dr. Robinson's view, that the process begins in the rete, though I cannot *prove* the contrary. Other points of difference are, that I find very distinct changes in the sweat ducts and glands, which he does not, and that cell effusion round the hair follicles goes much deeper than he describes. This is against one of his arguments in favor of the epithelium hyperplasia preceding the cell effusion, as, according to him, the processes of the hair follicles are produced beyond the cell effusion. I can quite confirm the accuracy of his observations in other respects.

Organisms in the horny cells have been previously described by Angelucci, who stated, at the International Congress of 1881, that micrococci were present in the scales. What their significance may be remains to be proved, but I am not personally disposed to adopt Lang's* view that they are etiological. I have compared my observations thus closely with Robinson's, † because he is a careful observer on the earliest visible lesions of psoriasis, and most other investigations have been on more advanced lesions. In larger patches, Thin's ‡ observation that the rete, or the top of the papillæ, is thinned by the premature conversion of the rete cells into horny cells is, I believe, true, and borne out by the clinical facts, but does not hold good for the earliest papules. Neumann's statement, that prickle cells are absent in psoriasis, is also not true of the earlier stage of the process, according to my observations.

Munro claims to have examined earlier papules than previous observers have done, but does not appear to be aware of Robinson's and my own observations, which were made in 1881, and described in my first edition, not only from a papule just recognizable by the naked eye, but on microscopic changes before there was visible elevation.

Munro states that the superficial cavity I have described above contains leukocytes, and that it is therefore really a dry abscess, and claims

* Wolff of Strasburg has shown that Lang's epidermophyton is really eleidin, and disappears when the fat is soaked out of the section.

† Robinson, *New York Med. Jour.*, July, 1878, vol. xxviii.

‡ Thin, *Brit. Med. Jour.*, July, 30, 1881.

that it is the primary lesion, and that the multiplication of these "abscesses" and the secondary hyperkeratosis make up the psoriasis scale crust, and that all the other changes described by previous observers are later and therefore secondary. My observations led me to believe that the rete changes precede those in the horny layers, and that the vascular and rete changes went on hand in hand. Munro says nothing about the masses of minute round bodies, too small for leukocytes, and I cannot say whether they are microbes or perhaps only keratohyalin globules, such as Wolff observed and thinks are what Lang called "epidermophyton," but at all events their nature should be further investigated. The round cells between the horny layers Munro calls leukocytes I also observed, but not in such masses, but the modes of preparation were imperfect twenty years ago compared to now, and they probably fell out in preparing the sections.

Kopytowski* claims to have anticipated Munro, but in the Russian language, and describes the horny layers thickened and separated by layers of leukocytes, diffuse or in foci; prickle cell layer also thickened, and also with leukocyte foci between them, and, mixed with degenerated epithelial cells, formed true abscesses and in some places cavities with serum. The other changes being those repeatedly described, interpapillary processes enlarged, fusiform cells at the apex of the enlarged papillæ, vascular engorgement, proliferation of epithelial cells and ecchymoses, and, in short, inflammation of the papillary layer. He considers the inflammation primary, the parakeratosis secondary, and that the results are attained by successive attacks of inflammation. Unna's observations set forth the primary parakeratosis and epithelial growth, and the secondary vascular dilatation view; for him, thickening of the horny layer is the first change. He ascribes to his morococci the same organisms which he finds in seborrheic eczema, a pathogenic *rôle*. He lays stress on the almost complete disappearance of keratohyalin and eleidin from the basal horny layer, with retention of most of the cell nucleus. He also observed layers of cells between the horny cells, mostly leukocytes, but thinks some are epithelial nuclei. The granular layer disappears at first, but is replaced at a later stage with increased keratohyalin.

All agree that the silvery aspect of the scales is, as Rindfleisch pointed out, due to permeation with air.

In the papillary layer the cells round the vessels are proliferated connective tissue cells, according to Unna, and leukocytosis emigration is limited in degree in the papillæ and epithelium.

The above are samples of the different views put forward, but on almost every point "Tot homines quot sententiæ" is true, and there is still room for the next generation of ardent histologists to investigate and theorize.

*Subsequently published in the *Annales de Derm. et de Syph.*, vol. x. (1899), p. 705.

Diagnosis.—The usual run of cases presents no difficulty in diagnosis. The absence of discharge throughout its whole course; the position of the patches, fairly symmetrically distributed upon the extensor surfaces, especially the elbows and knees; their well-defined borders; the imbricated white scales adherent into crusts, covering the raised, reddened base; and when the scales are picked off, the bright red, easily bleeding points, which start into view—form a group of symptoms of a strongly differentiating character. To these Bulkley adds the possibility of peeling off a thin pellicle, after all detachable scales have been removed. But when in one or other of the many phases presented by psoriasis some of the above features fail to be characteristically developed, unless the symptoms are taken as a whole, difficulties may arise in distinguishing it from lichen planus and lichen acuminatus, some forms of eczema, pityriasis rubra, squamous syphilids, seborrhea, tinea circinata, and lupus erythematosus.

From Lichen Planus.—Difficulty only arises when the lichen planus is in patches or infiltrations.

Psoriasis chooses the elbows and fronts of the knees; L. planus the flexures of the wrists and inner side of the knees or, even when it does appear on the extensor surface, the elbows are not the usual seat.

Psoriasis is conspicuous for the quantity of its scales; L. planus is conspicuous for their absence or scantiness, and there are never scaly crusts.

The ground color of psoriasis is a bright red, that of L. planus is of a bluish-red tint, unless more acute than usual.

Psoriasis begins by the formation of a small, flatly convex papule, scaly from the first, but sometimes requiring a slight scratch with the nail to reveal it. The papule speedily enlarges by spreading at the edge into a patch. L. planus begins as an irregular, flat, shining, smooth papule, and the patch is formed by the aggregation of many papules. The lichen infiltrations, which are more scaly than the patches, are produced by the springing up of fresh papules between the patches; the large patches of psoriasis, by the component patches spreading at the periphery until they meet. The thickening of the skin is much less than in the lichen infiltration.

Psoriasis, as a rule, leaves no staining, unless treated with arsenic. After L. planus, staining is always a marked feature.

From Lichen Acuminatus.—Error may arise between the papular stage of the lichen and psoriasis punctata, and between general L. acuminatus and general psoriasis; but in L. acuminatus the papules are acuminate, and begin on the trunk, and the infiltrations are formed as in planus. When both are general the scales are much less flaky, but harder and more horny, and the thickening of the skin is much greater in the lichen.

From Eczema.—As a rule, this is easy; but when eczema has ceased to discharge for some time, or when the inflammation has not been intense enough to produce discharge, there is occasionally great difficulty in distinguishing it from an ill-developed patch of psoriasis.

Eczema prefers the flexures, and then begins as groups of small vesicles on an inflammatory base, but it is quite common on the extensor surfaces, beginning there as groups of acuminate papules which may go on to vesiculation. It is exceptional not to get a history of discharge in eczema, which never happens in psoriasis, unless it is irritated.

Sharp definition at the border of the patch is the rule in psoriasis, and is seldom seen in eczema, which shades off into the healthy skin. This is a very valuable help in doubtful cases. Eczema crusts are dried inflammatory exudation with few scales; psoriasis crusts are all scales. When eczema has been dry for some time there may be only scales, but these are not then heaped up into crusts. Pick off the crusts of psoriasis, and you get bleeding; pick off the crusts of eczema, and you get serous discharge. An eczema patient is very often in bad health; a psoriasis patient is often in good health. In eczema, the complexion is nearly always pale and muddy; in psoriasis, the complexion is usually bright and ruddy.

When, however, there are only one or two patches of eczema, especially if upon the front of the leg, and there has been no discharge, or so little as to be unnoticed by the patient, the distinction is by no means easy, and only to be made by careful consideration of every point. Some cases of hyperemic psoriasis limited to the scalp are very like eczema of that part; but in psoriasis, where the eruption extends a little beyond the

scalp, the edge terminates abruptly. Although intensely red, the surface is quite dry, while discharge would always be present in eczema with the same degree of redness. When an old patch of eczema is unusually well defined at the edge, diagnosis is sometimes difficult; the fact of the patch being away from the usual psoriasis positions would be of value.

From Pityriasis Rubra.—The diagnosis gives trouble only between a pityriasis rubra of a few days' duration and an acute psoriasis of moderate extent, or when both have become general.

The development is slow in subacute psoriasis, often taking months or years to become general; pityriasis rubra is very rapid, two or three weeks, or even less, being often sufficient to cover the whole body.

Psoriasis is never absolutely universal, some intervals of healthy skin being always present; pityriasis rubra is nearly always really universal.

The scales are thin, papery, and never in crusts in pityriasis rubra; they are easily detached, and do not conceal the reddened skin beneath, which is generally not so thickened as in psoriasis.

In the acute forms of psoriasis the distinction is more difficult, as here there is deep redness, flaky instead of crusted scaliness, and a less defined border than usual; but the extension is still comparatively slow, the scales are not so large or thin, nor so rapidly reproduced, and the disease remains with large intervals of healthy skin between, however extensive the areas affected may be. There is, however, always the possibility that this form of psoriasis may develop into pityriasis rubra, so that the dividing line is often a narrow one.

From Tinea Circinata.—The few non-symmetrical patches in tinea circinata coming anywhere on the body, the margin at first papular, and the scanty scale formation, should excite suspicion of the true nature of the disease, which microscopic examination would confirm.

From Seborrhea of Scalp.—Psoriasis is usually in patches, seborrhea nearly all over the scalp; seborrhea scales are fatty and dirty-looking, on a non-inflamed surface. Where psoriasis is all over the scalp, it spreads beyond the hairy part, and its true nature is then evident; moreover, it is rare then not to

find psoriasis in its other favorite seats, or at least a history of its having been there. The diagnosis from the various forms of seborrheic dermatitis is given with those forms respectively.

From Lupus Erythematosus.—This comes usually on the cheeks, where psoriasis is seldom seen. The scales are scanty, the edge more raised, the tissues more thickened. In the early stage horny plugs are often formed in the patulous sebaceous openings, and if the disease is removed spontaneously, or by treatment, more or less evident scarring is left.

From Syphilids.—Both secondary and tertiary squamous syphilids may be mistaken for psoriasis. Errors arise chiefly from laying too much stress on one or two points, instead of considering the symptoms as a whole. The following points in the secondary squamous syphilids will assist in arriving at a correct conclusion:

An acquired syphilid is rare in a child, and psoriasis is rare under three or four years. The patches do not favor the extensor surfaces so much as the flexor, nor are they seen at distant parts of the body, with extensive intervals of freedom from disease. They are always small, seldom over half an inch in diameter, and there is no tendency to enlarge peripherally. The scales are scanty, and often dirty-looking. The color may be bright red at first, but in a few days a brownish-red tint is acquired. A fawn-colored stain is always left when the eruption subsides. The syphilid comes out in crops, and all stages are often present at the same time. Besides this, there are often concomitant eruptions of a different character, and nearly always corroborative evidence, such as sore throat and tongue, bone pains, iritis, or some other characteristic symptoms.

I have seen patches on the front of the leg larger and more crusted than usual, very like ordinary psoriasis, but there were scaly patches on the palms and soles to aid to a right conclusion; these shelled off and left a scaly collar round the original site, which was quite unlike psoriasis.

From Gyrate and Circinate Syphilids.—These also imitate similarly shaped lesions of psoriasis. Here again the position, color, and scales differ as described above, and the syphilitic cachexia is usually well marked.

From Tertiary Squamous Syphilids.—One form of this closely resembles some cases of psoriasis. Here again position may

assist. The syphilid is much more often on the face than psoriasis; the edge is more raised, giving the appearance of a depressed center; the scales, though white, are not imbricated and ulceration is very liable to occur, but even without this some scarring and deep pigmentation are usual sequelæ. The number of patches is seldom large, and they are not symmetrically arranged.

Prognosis.—The prognosis of psoriasis is good for any one attack, but bad for the disease as a whole. Although not always easy, we can promise to remove the eruption of any one attack, but we know of no means of preventing recurrences, which are almost sure to occur, sooner or later, in at least ninety per cent. of the cases. The frequency of recurrence is very variable. In some people it is an annual event, or even more frequent, one attack overlapping another even while under treatment. In others there may be an interval of years, these variations happening perhaps to the same individual at different periods of life. Left to itself, it may go on for many years with remissions and exacerbations, or it may sometimes disappear spontaneously.

We can, however, in some degree limit the extent of the eruption by timely treatment, and the maintenance of good health exercises an important influence in mitigating the severity of an attack, and even in warding it off for some time. For as it has been shown that any depressing influence may determine an attack in one predisposed, so averting such influences must be of some service in prevention. Since, however, our efforts in this direction must often be unsuccessful, the disease is pretty sure to recur, and we at best only lengthen the intervals of freedom, or diminish the severity of an attack. The universal form is said by Hebra to be especially obstinate, and occasionally fatal; probably these were cases I should call pityriasis rubra. I have never seen a case in which it is not possible to remove the eruption for a time, if the patient would give himself up to the treatment, though much perseverance is sometimes required. Failure occurs only in chronic alcoholics, or when the patient subordinates his cure to his business or social engagements.

Treatment.—Although the eruption of psoriasis can often be removed by internal or external treatment singly, a judicious

combination is the quicker and more effectual method, as this disease is frequently so obstinate as to tax all our resources and patience.

Favorable cases of moderate extent take from about three weeks to three months to remove the eruption, the shorter period only being required when the patient will give himself up to the treatment.

As there are, in a large number of instances, no special indications as far as the general health is concerned, empirical remedies are generally resorted to, but I am firmly convinced that if any defect, however slight, in the surroundings or health of the patient can be detected,—and careful search should always be made,—the soundest practice is always to endeavor to remove such defects before attempting the internal use of specific medicines; and in a large number of cases thus treated the eruption is removed without any occasion for their use. The direction in which the defects of health are most frequently found lies in those cases tending to the depression of the general vitality, *e. g.*, overwork, a relaxing climate, sexual excesses, suckling, or other drain upon the system. Gout, rheumatoid arthritis, and rheumatism have a causative relation in only a moderate number of cases. These indications must be met as far as the patient's circumstances allow; but failing to find any of these, we fall back upon specifics.

The general consensus of opinion points to arsenic as our stock remedy. It is apt, consequently, to be used far too indiscriminately in this disease, in which it is generally beneficial, as well as in many others, in which it is either useless or injurious. The other specifics are thyroid extract, salicin and its derivatives, and mercury. The general indications for and against these remedies will be given.

Arsenic.—There are few diseases of the skin in which arsenic is generally considered to be so beneficial as in psoriasis, but it is too often most disappointing in its effect.

Great variations exist in the effects of arsenic upon the eruption; even in the same person, it will at one time remove the disease, at another fail altogether. It is usually slow unless assisted by local treatment, and three months of full doses is required to give it a fair trial. Often improvement does not commence until a considerable quantity has been taken. With

regard to the patient, it is most indicated when the digestive organs are sound, and there is no other defect of health to grapple with, unless it be anemia, when arsenic would be beneficial. And as regards the psoriasis, it is likely to act best when the eruption is chronic and the hyperemia moderate.

It is contra-indicated, when there is an idiosyncrasy which makes the patient especially intolerant of it; when there is an inflammatory condition of the alimentary canal (except in drop doses in cases of chronic gastric catarrh); and when the eruption is coming out acutely and the patches are very hyperemic, as it often aggravates the eruption. Itching of the eyelids, redness of the conjunctivæ, nausea, vomiting, colicky pains, and diarrhea, are among the earliest symptoms which warn us to diminish the dose, but it need not be given up at once. As regards the skin, it aggravates the itching for a time in some cases, so as to make it almost intolerable, and not infrequently, fresh patches appear while taking arsenic, even while the old ones are subsiding. As already mentioned, pigmentation after the subsidence of the eruption is apt to occur in cases treated by arsenic.

If given for only three or four months, the pigmentation will usually be localized to the site of the patches; but when given for very long periods, general pigmentation, general thickening, and warty development of the palmar and plantar epidermis may ensue. It should therefore not be so long continued, and it is, moreover, useless for the disease, as arsenic has no prophylactic influence, and acts only locally on the diseased area.

The drug may be given in the form of liquor arsenicalis, liquor sodæ arseniatis (about half the strength of liquor arsenicalis), cacodylate of soda, or the Asiatic pills, which are in much favor abroad, and contain one-twelfth of a grain of arsenious acid. At first one pill is taken three times a day, and the number may be increased until ten or twelve a day are reached, and continued for several months. Three or four thousand have been taken in this way; but Kaposi said that if marked improvement had not occurred with five to six hundred pills, arsenic might be considered to have failed. Any colic and diarrhea may, to some extent, be controlled by opium. I prefer liquor arsenicalis because it admits of free dilution, and thus dimin-

ishes the risk of gastro-intestinal derangement, which is so apt to ensue during the arsenical course. As another means of avoiding this, the English plan is to give arsenic immediately after meals. The Germans, however, give it before meals; but few English stomachs can bear it given thus, and I believe it has no advantage *quâ* the skin. The dose of liquor arsenicalis should begin at three minims three times a day, and it may be increased to ten or fifteen minims a dose, if the drug is well borne. Much larger doses have occasionally succeeded where moderate ones have failed; but arsenic should always be given with caution, and 3ss of tinct. lupuli with each dose seems to facilitate its toleration. Great differences, however, exist in this respect. Some people can take large doses for months without any ill effects, while in others two or three minim doses produce so much irritation of the alimentary canal that the drug has to be abandoned. It should not, however, be given up until efforts have been made and failed to avoid these symptoms.

Subcutaneous injections have been tried in some cases, and very good results have been obtained in from one to six weeks; but my personal experience is that it is too painful and inconvenient for daily practice, as sufficient advantages cannot be promised to compensate for the drawbacks.

Cacodylate of soda is a compound of organic arsenic which has recently been advocated by French physicians as superior to the other salts of arsenic in efficacy and safety, so that, although it contains fifty-five per cent. of arsenious acid, it does not produce gastro-intestinal irritation or poisonous symptoms even in three-grain doses. This is, however, not correct. Murrell gave one grain three times a day in pill, and after eleven doses serious symptoms were suddenly produced. A grain of the salt is said to contain arsenic equivalent to about one-tenth grain arsenious acid, or over sixty minims of Fowler's solution. I have given the recommended dose of half a grain three times a day in several cases, but after Murrell's experience shall not continue it. I have not seen any results either good or bad, but have not given it for long together. If given at all, it would be wise to begin with one-sixteenth of a grain in solution and gradually increase it. I am not aware of results sufficiently satisfactory having been obtained

to show its therapeutic superiority over the old forms of arsenic.

Thyroid Extract.—This was strongly advocated by Byrom Bramwell for psoriasis, who gave it largely, but its drawbacks and uncertainty of action have considerably restricted its use. Norman Walker, who saw Bramwell's practice, regarded it as a dangerous remedy, and gives an emphatic opinion that it should not be used in psoriasis. I have used it largely, and if the following indications and contra-indications are observed there need be no danger in its use, and in a limited number of cases its action is often both efficacious and rapid. Unfortunately, one can never predicate when it will succeed even in the same patient, as I have several times known it remove one attack satisfactorily and quite fail in another.

It should not be given to elderly people or to those whose hearts are weak, but young persons, even children, usually tolerate it well. It should not be given to a developing psoriasis, as I have seen, repeatedly, a copious increase of the new lesions from it. The dose should not be more than five grains a day to begin with, which in a week may be increased to ten grains and in a fortnight to fifteen grains, if it is well borne; five-grain tabloids are the most convenient form of giving it. The risk of disagreeable symptoms is out of proportion to the advantage of taking larger doses, which should never be given unless the patient is in bed and under supervision. Bramwell, however, got up to forty tabloids a day. Headache, sleeplessness or giddiness, and the pulse rising over 100° F. should be the signal to stop it or diminish the dose. Patients get thinner while taking it. Less frequent symptoms are nausea, vomiting, failure of breath, diarrhea, and general rheumatic pains. Iodothyrin is supposed to be the active principle of thyroid extract, but it is doubtful whether it is any more efficacious than the extract. The initial dose is five grains. Thyroid colloid is very powerful, and it is best not to give it to patients going about. The initial dose is half a grain.

Salicin and its Derivatives.—In 1895 * I first advocated the use of salicin and salicylates for psoriasis. Since then I have used them very extensively, and have found them of great

* "Salicin and Salicylates in the Treatment of Psoriasis and some other Skin Affections," *Lancet*, June 8, 1895.

value; latterly, as salicin seemed to act as well as salicylate of soda, I have used it almost exclusively, as it rarely disagrees, while salicylate of soda often does. Salicin has the advantage over arsenic and thyroid that it may be given in the spreading stage of psoriasis, and will often check it, while the other two are apt to increase the eruption. As far as this is concerned, it has no contra-indications; while it is not always successful, it never seems to aggravate the disease, and the proportion of cures with it is higher than in the other two. In not more than two per cent. of the cases I have seen the papular erythema, which is well known to occur sometimes with salicin compounds. In a few cases I have had to stop it because it upset the stomach, and produced a headache or depression. To counteract the possibility of the last, I prescribe ℥ij tincturæ nucis vomicæ. The dose of salicin must be an adequate one. I rarely commence with less than fifteen grains three times a day, and increase it to twenty grains; it is seldom necessary to go beyond this, but I have given up to sixty grains three times a day without bad symptoms. Under its use, in most cases, the patches get paler, the scales looser, and then fall off and reform much less abundantly, the patch clears in the center, then the outer ring breaks up, and only fragments are left, which are best removed by local applications. It has much less effect on psoriasis of the scalp than elsewhere. Like everything else, it fails in some cases and is not a prophylactic against other attacks. Although serviceable if there are rheumatic or rheumatoid symptoms present, it acts in my belief as a microbicide in the blood, in which salicin is said to break up into salicylic and carbolic acids. Stimulating local treatment should not be employed whilst giving salicin, but soothing applications are sometimes adjuvant.

Mercury.—Mapother is a strong advocate for the administration of mercury internally on the microbicide theory, and claims uniform success with it. I have not used it to any extent by the mouth, but in a few cases which were rebellious to all the other specifics and various other treatment I have succeeded in removing the eruption with intramuscular injections of perchlorid or sozoiodolate of mercury, the latter being less painful, once a week in the same way as detailed in the treatment of syphilis, using 1-4 grain. While the slight pain and incon-

venience of weekly injections prevent an indiscriminate use, it is well worth trying in obstinate cases. Brault used yellow oxid injections in two cases with success.

Other Specifics.—Kaposi recommended carbolic acid in 1-2 grain pills, five to ten daily.

Turpentine: ℥x to ℥xxx three times a day I have found useful in hyperemic cases (*vide* Formulæ Miscellaneous Mixtures for directions how to give it). Antimony: ℥v to ℥x of the Vinum antimoniale, advocated by Hutchinson and Morris, is sometimes successful in acutely inflammatory cases. *Diuretics*, as acetate of potash, are often useful; while *iodid of potassium*, so strongly recommended by Greve and Boeck of Christiania and Haslund of Copenhagen, is also a powerful diuretic, especially when given in the heroic doses they advocate, up to 50 grams a day; possibly it also acts as a microbicide, but although good results may sometimes be obtained with it, it is not a drug to give indiscriminately, and if given at all, small doses should be given at first. It is contra-indicated where there is any renal or cardiac defect, as even small doses will produce severe eruptions in persons with defective power of elimination.

On the whole, what may be called the rational treatment of the patient, and the first four specifics described in detail, pretty well cover the ground, and leave but small room for these last-mentioned drugs.

Local Treatment.—Local measures play a most important part in the treatment of psoriasis, and are alone sufficient for the removal of the eruption in mild cases. They are of two classes: first, those used to remove the scales, and so prepare the way for the second, which exercises a directly curative effect upon the diseased skin, and so prevents the renewal of the scales.

In the first class come alkaline baths, wet packing, india rubber clothing, inunction with oil, vaselin, or fat, soft soap, and even caustics, and a six per cent. solution of salicylic acid in spirit. The fat, etc., requires to be well rubbed in. Many cases get well with one of the above methods alone, if persevered with; continuous baths in simple tepid water have also been successful. Much depends on the thoroughness with which the scales are removed. In indolent patches soft soap rubbed in firmly and for several minutes with wet flannel into each patch is one of the best methods, but it is no good to try

and rub over several patches at once. Half the battle depends on the thoroughness with which the preliminary and curative agents are rubbed in. In an extensive case two or three hours a day can be usefully spent in the application of the different remedial agents. For an alkaline bath, two to four ounces of bicarbonate of soda are added to thirty gallons of water at a temperature of 95° to 100° F., and the patient soaks in it for twenty minutes and rubs off the scales. It may be taken three times a week. After the scales have been removed, the selection of a suitable remedy is required, and as there are a legion of them, the principal only are given, with some points for guidance as to which to employ.

In the acutely inflammatory form, or whenever the hyperemia is very great, as in the cases described as P. eczémateux, the soothing remedies recommended in the treatment of eczma are alone suitable, such as continuously wrapping up the parts with calamin liniment, simple olive oil, or inunction with the latter. An excellent plan also is wrapping the affected part in cloths or lint soaked in the glycerin of subacetate of lead 1 to 8, and covering it with hat lining or other waterproof. This both soaks off the scales and diminishes hyperemia, and some parts get well with this alone. Alkaline baths are useful here also, as indeed in all stages of the eruption.

The special remedies suitable for the less hyperemic cases are all microbe destroyers, and should be rubbed or scrubbed in, not merely laid on.

Much experience and judgment are often required for the selection of the proper remedy in any particular case. The first object always is to remove the scales; the activity of the inflammation is next to be judged of, and in any case where there is a doubt it is always safer to use the weaker preparations, and when the strong are thought to be suitable to employ them well diluted at first. Remedies, therefore, have to be considered according to their stimulating and penetrating effect, since a remedy that would be most valuable for a chronic indolent patch would aggravate the eruption when it is congested.

Frequently, patches in one part of the body require different treatment from patches in another; and if a fresh attack supervenes upon an old one, the remedies used for removing the old

patches often aggravate the new, which probably require a much milder treatment.

The convenience of patients who have to go about has also to be considered. A very objectionable remedy is used irregularly by the patient, who is likely to blame the doctor for the imperfect result. Unfortunately, many of the best remedies stain or smell, and if the choice between the two evils has to be made, most persons prefer the stain to the smell, as most of the eruption is out of sight. Staining preparations, on the other hand, are obviously unsuitable for the face or other exposed parts. When the eruption is very extensive ambulant treatment is generally unsatisfactory, while, if the patient can be induced to lie up, the extent is of less consequence, and the doctor is untrammeled in his selection of remedies. Obstinate as psoriasis often is, it is rare indeed that success in the removal of the eruption for a time cannot be attained by skill and perseverance.

Chrysarobin,* introduced by Balmanno Squire, stands first as the most valuable remedy we possess, but used in the strengths generally prescribed of 15 grains to ℥j to the ℥j as an ointment or paint, is for the most part only adapted to those cases requiring strong stimulants. While very powerful and rapidly efficacious in suitable cases, it has a good many drawbacks attending its use, therefore the patient should always be warned of its probable effects, viz., an erythema of the skin, extending far beyond the part to which the drug is applied, attended with severe itching, heat, pain, and swelling; this subsides in a few days if the remedy be discontinued, and often even if it is not, leaving a dirty-looking desquamation. If used in the neighborhood of the face, conjunctivitis is apt to occur, and the erythema has been mistaken for erysipelas. It dyes the hair, nails, skin, and linen yellow, which turns to an indelible purplish-brown after washing, due to the alkali in the soap.

On the other hand, the patches are removed often very rapidly, leaving a whiteness † on the site of the eruption for a short time, in sharp contrast with the skin around, which is of a deep red, more from staining than congestion. Some of these

* This was formerly called chrysophanic acid, and exists in the proportion of eighty per cent. in Goa powder.

† Author's Atlas, Plate XXXVIII., Fig. 2.

disagreeable effects may, however, be often avoided by using Auspitz's method: ℥j of pure gutta-percha is dissolved in ℥x of chloroform, this is called traumaticin;* to this ℥j of chrysarobin is added, and after removing the scales this emulsion is painted on and forms a film; it is renewed every two or three days, or may be painted one coat over another for four days before removing the film. Besnier's modification is to paint on a solution of chrysarobin in chloroform, and then cover it with traumaticin varnish. Both methods are equally efficacious. As thus used the drug is only suitable for indolent patches, or after the hyperemia has been subdued by other means, but I have found it valuable in a much wider range of cases by using minimal doses of 1, 2, or 3 grains of chrysarobin to ℥j of zinc ointment. A grain to the ounce may be used even in most cases of acute psoriasis. It is wise, however, not to use it over a very extended surface in one region, as even this quantity will sometimes excite the peculiar erythema. In all doubtful cases try it on a small area to begin with.

Anthrarobin and other imitations of chrysarobin are practically failures.

Pyrogallic Acid in the form of an ointment (from gr. 10 up to ℥j to the ℥j) is not quite so strong or rapidly efficacious as chrysarobin, but it is a very good remedy. It excites no inflammation, unless applied continuously, and even then not beyond the point of application; but it stains the skin and linen, and may produce dryness, itching, and follicular papules or pustules. It should, moreover, only be used over a limited area at a time, as it may be absorbed, and would then produce strangury and olive-green urine, with moderate fever and nausea. Large doses of dilute hydrochloric acid are said to act as an antidote and preventive of these ill effects.

Resorcin, in an ointment of gr. 10 to ℥j to the ℥j of lard or lanolin and vaselin, is often efficacious for an average case; it is odorless, but stains the nails slightly, but less than chrysarobin or pyrogallic acid, and may be used for the face. In obstinate patches 2 or 3 grains of biniodid of mercury is a useful addition.

Salicylic acid, gr. 15 to ℥j to ℥j of excipient, is sometimes

* The proper way to make this is described in Formula No. 9, Varnishes, as few chemists dissolve the gutta-percha enough. The British Pharma-

valuable for obstinate patches on the scalp and knees with dense adherent crusts; it does not smell or stain.

Soft Soap and Spirit.—To limited patches, as on the front of the knee, scrubbing well with spiritus saponatus kalinus is often one of the best means to adopt; and for the scalp, when not actively hyperemic, the same liniment rubbed in with a piece of flannel dipped in hot water and then in the liniment removes the scales, and after rinsing it off with tepid water, a mercurial ointment, one or two grains of perchlorid or biniodid to the ounce, should be rubbed in. This treatment rarely fails on the scalp, if the patches are not inflamed. Oil of cade is sometimes a useful addition to the spirit soap. Hebra's "Wilkinson's ointment" is a strong, but very effectual application in properly selected cases, especially obstinate patches on the knees.

The *mercurial* ointments should of course only be used over a limited surface at a time. When mild stimulants only can be tolerated, they are most useful—hyd. ammon. gr. 10 to ʒij to ʒj of vaselin or other simple unguent; hyd. oxidum flav. in the same strength, or the two combined; ung. hyd. nitrat., more or less diluted; hyd. biniodid. gr. 3 to gr. 10 to ʒj. The last is a stronger stimulant. As they neither smell nor stain they are often preferable for the face, scalp, and other visible parts, and they may often be combined with other drugs.

Tar.—The vast majority of cases will bear stronger stimulants, of which tar in some form is the most universally employed. Ung. picis liquid., pure or diluted, is often effectual, but dirty, and smells disagreeably; less unpleasant are the oleum cadini, oleum fagi, oleum rusci, or creasote, ʒss to ʒiv to ʒj, as ointments, or as lotions dissolved in spirit, with or without soft soap; or liquor carbonis detergens, from ♏xx to ʒj of water and upwards to the undiluted liquor, are all valuable remedies. Tar baths are also useful. Tar, however, has many disadvantages; serious constitutional symptoms, as well as acneiform and other eruptions of the skin, may ensue, if absorption occurs from its vigorous employment, or from some idiosyncrasy of the patient. It also smells strongly and stains the skin. Where the patient will give himself up to treatment, an excellent plan is to paint on with a stiff brush the

copeia uses bisulphid of carbon as a solvent, but its fecal odor is an insuperable objection to it.

liquor carbonis detergens or its B. P. equivalent, liquor picis carbonis, and then apply compresses, under oiled silk, of glycerinum plumbi subacetatis, one to eight distilled water. The painting is done twice a day; the compresses are kept on night and day.

Thymol, Naphthol β, etc., are remedies which may be used in the same class of cases as those in which tar would be suitable, but are much more cleanly and pleasant. Thymol was introduced by myself for this purpose some years ago. It is perfectly clean, being a white crystalline substance, and its odor, that of thyme, is not unpleasant; it is especially useful, therefore, for eruptions on the face. It may be used from gr. 15 to ʒiij to the ʒj as an ointment or as a lotion (Lotions, F. 14, *a*).

Naphthol was introduced by Kaposi as a remedy; it is of about the same efficacy as thymol, may be used of the same strength, and in similar cases. It is equally clean, and when made into an ointment is almost odorless, and is thus the most pleasant remedy we possess for psoriasis (F., Parasiticides, No. 8). If absorbed, it is converted into naphthol sulphate, and produces cloudy urine. Although decidedly useful, I have not so high an opinion of it as Kaposi appears to entertain.

The *nails* require special treatment. Arsenic has the most effect of internal remedies, it appears to pick out the diseased tissue; locally, if the lesion is distal only, remove the morbid epithelium beneath the nail, and scrape the nail blade with broken glass. Then push beneath the nail an ointment of acid. salicyl. gr. 10 and upwards, ung. zinc. oleat. ʒj. If the disease commenced proximally, push the ointment as far beneath the nail fold as possible, and wrap up the finger-ends in the ointment; pits and other early developments should be scraped out. Sabouraud's treatment for onychomycosis (which see) is also useful in some cases.

The watering-places that are most beneficial in psoriasis are those which contain arsenic, such as Royat, La Bourboule, and Levico, named in ascending order of the quantity of arsenic, and are proportionately efficacious internally.

Sulphur waters, such as Harrogate and Strathpeffer in Britain, Aix-la-Chapelle, Schinznach, and Barèges, etc., on the Continent. They require a good deal of judgment in adapting

the strength of the baths to the character of the eruption, or it may be aggravated instead of relieved.

Thermal baths, in which the prolonged immersion in warm weak alkaline water is the main *modus operandi*. Such treatment may be found at Bath, Buxton, Leuk, Aix-les-Bains, and many other places at home and abroad.

In all these places success in removal of the eruption can be obtained in judicious hands, but the duration of freedom from eruption is not longer than that produced by other treatment, except what may be gained by the rest and diversion, change of climate and scene, the regular diet and living. These points, together with the elevation and other climatic considerations, must be borne in mind in selecting a spa, and some aid in this direction is afforded in the Appendix.

PITYRIASIS RUBRA.*

Synonyms.—Dermatitis exfoliativa (Wilson); Pityriasis rubra aigu (Devergie); Erythrodermie exfoliante (Besnier).

Definition.—Pityriasis rubra is an inflammatory disease, involving the whole surface of the body, characterized by deep redness with abundant flaky desquamation.

This disease is one of the few forms of dermatitis which become universal. My statistics give the rate of three cases in two thousand. It may be primary or follow some other form of dermatitis, be acute, chronic, or relapsing; but the general aspect of the skin varies but little under the different circumstances. Some authors are inclined to regard it as a form of eczema, but the majority of cases are much more like a very

* *Literature.*—Author's Atlas, Plate XXIX.; Buchanan Baxter, "General Exfoliative Dermatitis," *Brit. Med. Jour.* (1879), vol. ii. pp. 79, 119; Hutchinson, "Rare Diseases of the Skin" (1879), p. 241; Pye-Smith, "Superficial Dermatitis," *Guy's Hosp. Rep.* (1881); vol. xxv. p. 27; Percheron, "Étude sur la dermatite exfoliatrice" (Paris, 1875). The works of E. Wilson, Hebra, Devergie, Bazin, Hardy, may all be consulted with advantage. Brocq's monograph, "Étude critique et clinique sur la dermatite exfoliatrice généralisée" (Paris, 1882), or the analysis of it in *Ann. de Derm. et de Syph.* (1883), vol. iv. p. 90. Discussion at Paris International Congress, 1889, and Derm. Soc. Lond., *Brit. Jour. Derm.*, vol. x. (1898), p. 437.

acute psoriasis, and it is in its symptoms and course a separate affection.

Many restrict the term pityriasis rubra to Hebra's type, and include all the rest under dermatitis exfoliativa, but in my opinion they are all branches of the same trunk.

There are two * leading types of the disease—the large scale, or Wilson type, which may be primary or secondary; the small scale, or Hebra type. There are, however, connecting links between these types. The "Ritter" type of the new-born is perhaps a third variety.

Symptoms.—In a typical case, often without definite symptoms, except perhaps a feeling of debility and depression, the eruption appears suddenly, either as a diffused redness, rapidly spreading all over the body, and soon becoming scaly, or in the form of very slightly raised, well-defined red patches, which soon become scaly.

They appear symmetrically in varying positions, the chest and limbs being perhaps the most common when there has been no previous eruption, but it may begin anywhere. The disease is, however, seldom seen at this stage.

The eruption spreads rapidly at the edge of the lesions, and others forming, the whole body may become involved in from two days to two or three weeks, so that there is absolutely no sound skin anywhere. The nail substance may not be involved, but it is often separated from its bed, partially or entirely, by the accumulation of epithelium beneath, and is then thrown off. The hair also is shed partially or completely. The entire surface is of an intense bright red, soon assuming a deeper hue, but the color is partially concealed by the scales; the redness is uniform, and there are none † of the red puncta, which can be seen with a lens in psoriasis, when the scales are removed. Everywhere the surface is covered with thin, papery scales,

* Brocq considers desquamative scarlatiniform erythema a benign primary form of it, and divides the rest into general exfoliative dermatitis—(*a*) subacute, (*b*) chronic, (*c*) infantile; and pityriasis rubra—(*a*) subacute and benign, (*b*) chronic malignant (type, Hebra), and (*c*) chronic benign, the last variety being put forward tentatively. Although no doubt cases of each type are to be found, in my opinion the subdivision is too elaborate and founded on too small a number of cases to be of practical value.

† The case described in Hillier's handbook is an exception to this.

small upon the face, but on the body very large, free at all their edges, except one, perhaps, and somewhat imbricated, like scale armor, but never adherent into crusts. The scales are easily rubbed off, but are rapidly renewed, so that two or three pints or more may be collected in the twenty-four hours. On the palms and soles the skin is detached *en masse* or in very large pieces, but the redness does not show after the first exfoliation. With all this intense hyperemia only slightly appreciable infiltration of the skin is usually present, and the surface is dry where the scales are detached or easily detachable, but slightly moist underneath, where they are more closely adherent.

The sweat secretion is not always interfered with, and is sometimes profuse in parts like the axillæ. There are no rhagades usually, the cuticle alone splitting, and there is little or no itching, but there is a feeling of burning, tingling, stiffness, and tenderness. Once the disease is completely established, the appearance of the skin may undergo but little change for an indefinite period, but in cases that have lasted for a long time there may be either thickening with the so-called lichenification from infiltration in some parts, or thinning in others, the redness gets more brownish in hue, and the scales smaller. The tongue appears preternaturally red, and there is, no doubt, exfoliation here; but it has been recognized in only a few cases, probably on account of the moisture of the parts removing the epithelium as fast as it is loosened; nevertheless, transitory white patches have been observed on the tongue and oral mucous membranes.

Variations.—In a few cases the itching is severe, and is sometimes the first symptom to attract attention. Attacks limited to certain regions occur, which must be included under this term, though contrary to the definition and to the first ideas of the disease; these may ultimately develop into universal attacks; or, on the other hand, the first attack may be the most severe, and future attacks diminish in severity. Devergie describes cases with fluid exudation in considerable amount, but it does not stain linen, and may not even stiffen it; in the latter case it has often been compared to sweat, and possibly may consist largely, if not entirely, of that secretion, but in advanced cases the sweat glands are destroyed. The cases secondary to eczema are often of a moister type than the primary cases and

those secondary to psoriasis. Rhagades, though not common, may occur, and in this sort of case the eyelids may be drawn down, owing to the stiffness of the skin.

From time to time cases have been published under various names, signifying their most prominent features of inflammatory redness and persistent desquamation, generally universal, but occasionally partial, as in Bulkley's case, where the hands and feet only were invaded; the term dermatitis exfoliativa covers them all pretty well, but while they are generally acutely hyperemic only, they are sometimes vesicular or imperfectly bullous. Bullæ may, however, form in typical cases, and in one of mine pemphigus had been diagnosed. Hardaway had a case in which there were successive crops of a dozen at a time for a week on the thighs, abdomen, and buttock. Baxter, in his valuable paper, has noticed nearly all the cases up to date, and while they do not exactly fit in with the typical cases of P. rubra, all but the bullous cases approach that disease most nearly, and it is probable that we must widen our conception of it. On the other hand, Duhring is inclined to regard them as belonging to a class of their own.

Pigmentation, sometimes very deep, may take the place of the ordinary redness. This has been observed by Handford, Brocq, and in three cases by myself. In one of mine it was not true pigmentation, but due to a venous capillary congestion, and it was almost completely removed for a moment by pressure. The body was mahogany-colored, the thighs deep slate, the legs not quite so dark. Britton also reported a case at the Leeds Medico-Chirurgical Society. In another, a woman æt. twenty-two, there was a universal slate color which supervened six months after the onset, and before arsenic was given. Both in this and Handford's case bullæ had appeared in small numbers from time to time. The converse appears to be a case of S. Mackenzie, in which there was exfoliation, but the skin remained white. Du Castel had a case in which striæ atrophicæ followed a severe attack in a young girl.

Another complication observed in one of my cases, a lady æt. thirty-five, was the formation of numerous cold abscesses. They formed rapidly and generally without pain, sometimes small and superficial, at others large and deeper, and contained a quantity of thick yellowish-white pus. They healed up

readily, but the succession lasted for many months. The case, which had been doing well, died with cerebral symptoms suggesting the possibility of a cerebral abscess. Pernet has also had a fatal case in an old man with similar abscesses.

I am quite satisfied that cases of true P. rubra may be partial. I have also seen, in some cases, the scales quite small and powdery where the hyperemia has been moderate, and in others rather free moisture in some parts, while the rest of the body presented typical characters.

The disease may begin with sudden swelling and redness, indistinguishable from erysipelas, though undoubted erysipelas has preceded an attack. This kind of swelling rapidly subsides, as a rule, but it may be more permanent, though to a less extent; brawny infiltration is also recorded; and limited thickening of the cutis in cases of long standing is not uncommon. The nails may be preternaturally softened and thinned; or on the other hand thickened, roughened, and furrowed transversely; they may also be yellow and translucent or opaque. In Wallace Beatty's case there was superficial ulceration in a kind of network. In a case of Hutchinson's, in which the hair was thrown off, when it grew again it was snow-white and remained so, but the eyebrows and lashes were pigmented.

Vidal and Kaposi have each had a case where small patches of spontaneous gangrene of the skin were observed on the shoulders, sacrum, thighs, etc. Stephen Mackenzie had a case where there was general pityriasis, but no redness; as a sequel, pityriasis rubra pilaris has been recorded by Devergie and Tilbury Fox.

Pemphigus foliaceus has supervened in a few instances; Pringle, among others, relates an example; Liddell also has had a case.

General Symptoms.—In the majority of instances it has occurred in previously healthy subjects, and even where it has not been so, in many cases, the general symptoms have been slight and indefinite, a feeling of debility, depression, and chilliness being the most frequent. On the other hand, severe rigors and considerable fever, reaching to 103° F.* and even

*Gairdner's case, and a man in U. C. H. In this case, after malaise and slight chilliness, a cold bath excited a severe rigor, and the eruption came out on the chest and legs the same night.

104°* as a night temperature, with a morning remission, have been noticed in a few cases in which the temperature has been taken regularly; this fever is usually of short duration, and occurs only in the first few days, subsequently falling to normal or subnormal; but recurrences of fever, especially in relation to relapses, may be kept up for months. How severe the symptoms may be the following case exemplifies. A man, æt. forty, came under my care who, in the course of seventeen years, had thirteen attacks, of which nine were partial and apparently psoriasis, the four last universal and true P. rubra. The first came on one year after rheumatic fever, which left no cardiac affection. In most of the attacks he felt languid and out of sorts; in the last, after having had patches on the extensor aspect of the limbs, just like the developed disease, for four months, it became universal in two days, with great prostration, anorexia, and slight diarrhea, with subsequent constipation. He was doing well, the eruption having cleared off the face and chest, when a return of the weakness and depression was rather suddenly manifested; the throat was sore, and the temperature, which had not exceeded 100° for ten days, rose to 102° F. Four days later an attack of sudden swelling and redness, indistinguishable from erysipelas of the face, occurred, followed by transitory improvement in the general symptoms. Then the pityriasis again became universal; nightly recurrent rigors, once amounting to a slight convulsion, set in; the temperature reached 104° F. at night, falling to 100° F. during the day; there was moderate albuminuria (1-10 albumin the last day); considerable emaciation; typhoid condition; pulmonary edema, and a temperature of 106° F. an hour before death, which occurred fourteen days from the first change for the worse, and nine weeks from the disease first becoming general. Post mortem there was pulmonary edema, a large soft spleen, and a fatty liver, but nothing to account for the result.

Other cases with the same symptoms, with the addition of diarrhea,† have been previously recorded.

Insanity ‡ has developed in the course of the disease. One of my cases was associated with mania, and the speech was

* Case of Hessy, U. C. H., males.

† Mary T., U. C. H., females.

‡ See Discussion on Pit. Rub., *Brit. Jour. Derm., loc. cit.*

slurred and almost unintelligible, like a general paralytic. The patient, a middle-aged lady, recovered in mind and body. A case of Pringle's became acutely maniacal and died, and another "went mad."

Krafting * records a case in which there was a development of innumerable fusiform celled sarcomata from a pin's head to a pea in size. They disappeared spontaneously.

In cases of several years' standing anemia, gradual emaciation, and exhaustion may lead to death; or an intercurrent malady, such as phthisis, pneumonia, or bronchitis, may usher in the end.

Instead of beginning in previously healthy subjects, in several cases there has been a history of acute rheumatism, with or without consequent heart disease, and in five cases, at least, erysipelas or an erysipelas-like condition, has immediately preceded the outbreak of pityriasis rubra, or an exacerbation of it. In most of these, however, erysipelas was probably only simulated.

General enlargement of the lymphatic glands is not unusual.

Defects of nutrition of the skin of long standing have existed in a few cases.

Many have been the subjects of psoriasis, eczema, or seborrheic eczema before or at the time of the outbreak. In one † the head and neck were eczematous, and the trunk like P. rubra; in another ‡ psoriasis existed at the time of the outbreak and lasted six weeks, and as the P. rubra got better the psoriasis resumed its normal course. An extraordinary case, under my own care, was that of a young woman § with general scaly folliculitis, who during treatment with subcutaneous injection of arsenic developed rheumatic fever (her second attack) with peri- and endo-carditis, double iritis, and multiple arthritis. The skin became acutely inflamed, the whole of the original rash shelled off in large patches, the skin beneath was smooth and shiny, and then scaly, and P. rubra developed. The woman recovered after being almost at death's door, and

* *Annales de Derm.*, vol. vi (1895), p. 1098.

† S. Mackenzie, *Lancet.*

‡ Guibout, *Union Médicale.*

§ Her original eruption is depicted in Plate XXVI. of my Atlas, with the full history of her case.

subsequently there was a slight return of the primary eruption. It is the rule in these secondary cases that the disease develops beneath, as it were, the original lesion, and as the pityriasis rubra involutes, the primary eruption resumes its course more or less completely. Baxter had a case developing on "lichen ruber." He also had a case following pityriasis capitis and erythema papulatum, and another in a child of six months developing from eczema of the head and face. In my experience it is far more frequent after psoriasis * than any other form of dermatitis. It is noteworthy that nearly all these are forms of dermatitis which are liable to become universal, or nearly so, while still preserving their usual characters; but while some relationship is suggested, we must not conclude at once that the affinity is pathological, as it may be only etiological. Brocq † quotes a case in Vidal's clinic in which a severe attack of two months' duration, with intense fever, was excited by the too vigorous application of chrysarobin. I have also seen a typical case of P. rubra following the too vigorous inunction of ung. hydrarg.,‡ and one from the external use of arnica. These artificial cases, and those secondary to psoriasis and other forms of dermatitis, Brocq wishes to separate on the ground that they are not universal, nor of long duration; but this, while true of some cases, is not so of others. I have repeatedly seen the most severe, absolutely universal, and fatal cases in this class of secondary P. rubra, and, except etiologically, in every way similar to the other less common primitive cases, and it appears to me to be illogical to separate them.

There is also a premycosic form, in which clinically the eruption is indistinguishable from ordinary P. rubra until the tumors appear.

The Small Scale, or Hebra Type, of Pityriasis Rubra.—Typical primary cases of this kind are very rare, very slow in their development and course, and almost invariably fatal, but all small scale cases are not of this type. Thus Jessie R., æt. forty-

* S. Mackenzie found it most frequent after eczema, *Brit. Jour. Derm.*, vol. i. (1889), p. 285; analysis of twenty-one cases.

† *Amer. Jour. Cut. Med*, vol. iv. (1886), p. 25.

‡ In 1804, when mercurial inunction was extensively used, Moriarty of Dublin published a *brochure* with a series of cases which he called mercurial lepra, but which were really exfoliative dermatitis.

seven, came to me with dermatitis extending over almost the whole body; there was moderate hyperemia with dry powdery scaliness, the limbs were brighter red than the trunk. She recovered in three months from the onset.

In a typical case the symptoms are redness, gradually increasing in extent and intensity, of a venous tint on the lower limbs, followed by the development of comparatively fine scales constantly shed and renewed. The general health is but little disturbed at first, but eventually there is increasing weakness, marasmus, and death by exhaustion. The skin towards the end loses its red color and becomes of a yellowish tint; it atrophies and shrinks, this thinning being a marked and diagnostic feature. Jadassohn,* who has written an able and exhaustive paper on Hebra's form, while contending that it is an absolutely definite and separate disease, admits that to Hebra's description must be added, chiefly on the authority of Kaposi and H. Hebra, the following symptoms: The desquamation, instead of being fine, may be large and free; there may be actual thickening and edema of the skin instead of thinning; itching may be a notable feature; slight moisture may be present; ulceration may not be absolutely confined to bony points of pressure; enlarged lymphatic glands; and, finally, that the prognosis is not altogether unfavorable. These additional symptoms are the connecting links to the other forms. In W. Peter's case † the lymphatic glands were enormous, and the spleen was enlarged, but the blood was normal. In Elliot's case ‡ the first attack was only an erythrodermia, and he only suspected pityriasis rubra of Hebra. Two years later another attack was typical of the disease with enlarged glands; subsequently the man died with general tuberculosis.

Course and Termination.—The course of pityriasis rubra is very variable. It is most common for it to come on suddenly, become complete in a few days, and then continue for days or months, or years perhaps, or only end with life itself. It may

* "Ueber die Pityriasis rubra." (Hebra), by J. Jadassohn, *Archiv f. Derm.*, 1892. Full critical abs. by Doyon, *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 413. *Loc. cit.*, vol. lvii. (1901), p. 33. Kopytowski and Wielowieski give the pathology and anatomy.

† *Dermat. Zeitschrift*, vol. i., part iv.

‡ *Amer. Jour. Cut. Dis.*, vol. xv. (1899), p. 35.

take several months to involve the entire surface; or in some cases, after having been confined to a few regions for some time, it slowly, or without apparent reason, rapidly becomes general. Many acute attacks get well in a few weeks or months, and even after years they may recover, sometimes spontaneously, and others, apparently, as the result of treatment. The disease predisposes to future attacks, some patients having annual recurrences, others going on for long irregular intervals; and even when cases are apparently getting well, a sudden relapse is not at all infrequent.

The unfavorable cases may go on to death in a few weeks or months with the symptoms already described, or they may drag on for many years, and die of gradual exhaustion, or of some intercurrent disease. When the case is getting well there is a diminution in the intensity of the redness, the scales are less quickly reformed, then clear places appear, increase in size, and gradually the whole skin resumes its normal appearance, leaving the patient more sensitive to cold than before, which may to some extent explain his liability to future attacks.

Children.—The disease is very rare in children, and when it does occur runs a more acute course, is generally attended with severe constitutional symptoms, and is more likely to lead to death. The skin lesions have the same characters as in adult cases. In most cases it has been preceded by some other form of dermatitis. Some of these cases of general exfoliation are probably due to congenital syphilis, as in the following case of a boy, æt. six weeks, who had been ill a fortnight. The whole of the body surface, and the oral mucous membrane, were of a deep red color, and the whole skin was desquamating freely, but not in large flakes, otherwise it looked like pityriasis rubra; the eruption began on the buttocks, but there were no other signs of congenital syphilis, and the family history was doubtful. Non-specific treatment was tried for more than a month without benefit; it was then put on hyd. c. cret. gr. 1 three times a day, and was well in three weeks. Dr. Kirk White * records a case in a child twelve days old, coming on two days after exposure to carbonic oxid and acid poisoning, but the child got well in a fortnight.

* *Amer. Jour. Cut. Dis.*, vol. xiii. (1895), p. 341. He reports it as a case of the Ritter form.

Under the name of **Dermatitis Exfoliativa Neonatorum,*** Ritter has described an eruption which he observed in the Foundling Asylum at Prague, where nearly three hundred cases occurred in ten years. It begins in the first or second week of life, and occasionally as late as the fifth, usually in the lower part of the face first, but it may begin anywhere with patchy or diffuse, soon becoming universal, redness and scaling, which may be branny or in laminæ, like pityriasis rubra, and either dry or with effusion beneath the epidermis; sometimes it presents vesicles or flaccid bullæ like pemphigus foliaceus, and then there are crusts as well as scales, with rhagades on the mouth, anus, etc.; there is a total absence of fever or other general symptoms. About fifty per cent. die of marasmus and loss of heat, with or without diarrhea; in those who recover the skin becomes pale and the desquamation gradually ceases, the disease running its course in a week or ten days. Mild relapses sometimes occur, or there may be septic sequelæ–boils, abscesses, or even gangrene. Ritter regarded it as of septic origin; Behrend thought it was pemphigus foliaceus; while Kaposi, who had also seen cases in lying-in and foundling hospitals, while admitting its clinical resemblance to pemphigus foliaceus, regarded it as an aggravation of the physiological exfoliation of the new-born. Riehl found a long thin mycelial fungus, which he thought to be pathogenic, but a schizomycetic toxin is a more probable cause.

Cases have also been described by Billard, von Baer, Caspary, and others, but none have been recorded in this country.† Morton of New York and Das of Calcutta have also reported cases in 1895 and 1899 respectively, and Spencer reported an outbreak in a lying-in hospital in Sydney which he regarded as a separate disease, and called it after his own name; but while the initial lesion varied as erythema, macule, papule, vesicle, pustule, or bulla, it developed into widespread exfoliation, and behaved generally like Ritter's disease.

Etiology. Age.—There appears to be no limit for pityriasis rubra at either end of the scale as regards age. I have seen one well-marked primary case in a child of two months, and

* *Vierteljf Derm. u. Syph.*, Heft i., 1879.

†G. Elliot of New York reports two cases with general review of the subject in *Amer. Jour. of the Med. Sciences*, January, 1888.

one of nearly eighty years with recovery; but the majority occur between forty and sixty years of age. However young the patient may be, it is very unlikely to be of congenital origin.*

Sex.—Both sexes are liable, but there is a decided preponderance among males, in the proportion of three to two, or even higher. The only other predisposing causes known are various forms of extensive dermatitis, such as eczema, psoriasis, lichen acuminatus or dermatitis due to mercury, chrysarobin, arnica, etc. I have shown in a paper read at the Paris Dermatological Congress of 1889,† that there is a close relationship between rheumatism, especially the acute form, and gout and P. rubra, eleven out of eighteen cases having had this association; and Jadassohn points out the frequency of tuberculosis in some form, in the Hebra type of cases. Out of eighteen cases, in eight tuberculosis could be proved, in one or two more it was doubtful, and in the rest no inquiry had been made as to the point.

Of exciting causes, sudden chills have so immediately preceded the onset in some cases that they may fairly be inferred to have excited the attack. An alcoholic debauch is recorded in two cases. Both the exciting and predisposing causes, however, leave a large number of cases wholly unaccounted for; and since the conditions mentioned, both as exciting and predisposing causes, are of common occurrence, while pityriasis rubra is very rare, there must be some underlying factor at which we cannot even guess with our present knowledge.

Pathology.—Histological examination shows that the disease is a dermatitis, quite superficial at first, but when it has lasted some time the whole depth of the skin is involved, and eventually new connective tissue is developed, which subsequently undergoes cicatricial-like contraction, with abundant pigmen-

* Rasch describes the case of a woman, æt. thirty-two, who had suffered from universal redness and exfoliation from birth; a brother and sister had suffered in the same way, but had died at three and a half and nine years respectively. Histologically the changes were those of ichthyosis, and he called it therefore "ichthyosis rubra." *Derm. Zeitsch.*, vol. viii. p. 669. Abs. *Brit. Jour. Derm.*, vol. xiv. (1902), p. 110. Sangster had a somewhat similar case, but the ground color was normal; he called it "congenital exfoliation of the skin."

† *Transactions*, 1890, p. 68.

tation, hyperplasia of the elastic fiber bundles, and obliteration of the skin appendages.

The anatomy, however, throws no light upon the original pathological factor; whether, as Pye-Smith thinks, it is a primary dermatitis, or, as many think, it is consequent on some defect in the nervous system, there are too few facts to allow of anything more than conjecture. Assuming that it is of nervous origin, it has still to be determined whether it is of peripheral or of central origin. If central, however, the disease must be placed high up in connection with the trophic centers.

Myelitis, with a P. rubra condition of the skin, has been recorded by Jamieson, and it is of value as evidence in this direction. Quinquaud and Lancereaux also describe both peripheral and central nerve changes of inflammatory character, in connection with the disease. On the other hand, the spinal cord, pons, and medulla in two of my cases were carefully examined by Dr. Frederick Mott, and no marked changes could be made out. In the light of recent pathology it is probable that the nervous system is only indirectly at fault, the primary cause being a bacillus or its toxin acting on the nervous system. Haushalter found a microbe with white culture resembling, but different from, staphylococcus albus, but its pathogenic character was not proved. It is also open to discussion as to whether the toxin is formed in the skin or from within the body; in either case it would appear that it is an auto-toxin which the patient manufactures to his own detriment for an indefinite period.

Anatomy.—Skin removed from the dead body has been examined by several investigators. As I believe I was the first to examine skin from the living body, where the disease had existed only two weeks, I will give the results.

The skin was taken from the left side of the trunk. The process was entirely confined to the part of the skin above the longitudinal vessels of the superficial plexus, with comparatively little change in the lower half of this part. The sweat glands and other structures below the plexus were, therefore, quite normal.

In the horny layer the upper two-thirds were split off from the lower third, which was closely adherent to the rete; the individual layers were not at all separated from each other, as in psoriasis (see Fig. 23). The rete was decidedly thinned over the papillæ, sent down long narrow processes between the papillæ, and thus produced a great apparent enlargement of them. The individual cells of the rete were unaltered,

and no leukocytes were observed among them. The papillæ were enlarged transversely, as well as longitudinally; both they and the immediately subjacent corium were infiltrated with leukocytes, but only in moderate numbers, and below this they became quite sparse; there were none below the superficial horizontal vessels. The fibers of the papillæ and upper part of the corium were separated and stretched, inferably by effusion of serum. The cell infiltration was most abundant round the papillary vessels and the sweat ducts, where they traversed

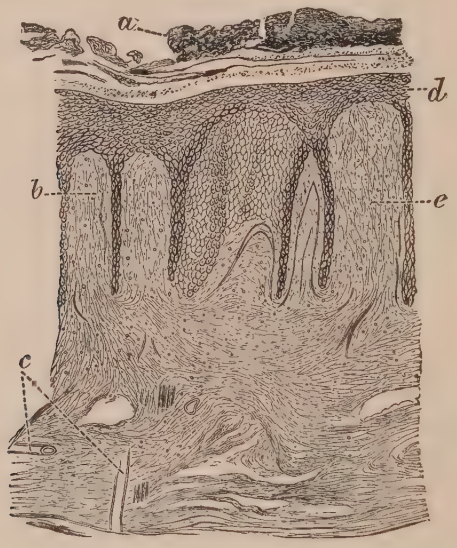


Fig. 23.—Pityriasis rubra, two weeks' duration, side of trunk.

a, scales; *d*, rete, thinned above, but with enormously elongated interpapillary processes; *e*, papilla enlarged vertically and transversely; *b*, papillæ and upper part of corium infiltrated with leukocytes (the infiltration was much more abundant than is depicted in the wood-cut); *c*, dilated blood-vessels.

the affected part of the corium; the lumen, however, was unobstructed here, but occluded in the rete.

In Hans Hebra's case of his father's type, of thirteen months' duration, the cell infiltration was present throughout the corium, and very abundant round the appendages of the skin, being present between the acini of the sweat glands. In a case of five years' standing there were leukocytes even in the fat, but "the general impression given was that of a scar with epidermis over it."

The papillæ, sweat and sebaceous glands were atrophied or absent. There were large coils of elastic tissue, and yellow pigment infiltrated the lowest part of the rete and was scattered in masses throughout the corium.

Jadassohn found in Hebra's form slight infiltration of round cells in foci in the upper portion of the corium; increase of the connective tissue nuclei; large numbers of giant cells, especially in the papillary body and round the sweat glands; great accumulation of yellow and brown pigment in the corium; extreme proliferation of the cells of the rete and invasion of immigrant cells; thinning of the stratum granulosum and raising up of the horny layer into lamellæ.

Petrini and Babes found degeneration of the collagen substance of the papillæ and vessel walls and thrombi in the vessels. Jordansky analyzed the scales and found the nitrogen in them was about normal (fifteen per cent.). The patient shed from 4 to 8 grams of scales a day, averaging 5½. See Unna's "Histopathology," p. 271, for further details on the Hebra type, and pp. 274–276 for histology of the other forms.

Diagnosis.—Its sudden onset and rapid involvement of the entire surface; the intense redness, without exudation of fluid or thickening; the copious exfoliation of thin, papery scales; and the tendency, if untreated, to become chronic and lead to a fatal issue, are its most characteristic features.

It may have to be distinguished from psoriasis, eczema, pemphigus foliaceus, and lichen acuminatus.

It differs from *psoriasis* in its being absolutely universal, which psoriasis * never is in my experience; the rapidity with which it spreads over the body; the absence of thickening, and the scales never adhering to each other in silvery crusts; the scales being large, thin, papery, and easily detachable; and the absence of red puncta when the scales are detached. Some of the more highly inflamed cases of psoriasis approach the pityriasis rubra type more closely than has just been described, but they are not universal, and retain many of the psoriasis characters.

It differs from *eczema* in the first four particulars. It is never in yellow crusts; there is seldom exudation, or, if present, it is usually scanty and partial; but, if abundant, does not stain, and seldom stiffens, linen; and itching is absent, or at least moderate. Neither in eczema nor psoriasis are the general symptoms so severe.

It presents many points of resemblance to *pemphigus foliaceus*, but it differs from it in that there are no flaccid bullæ, with

* Universal psoriasis of some authors is applied to cases of pityriasis rubra which have developed from psoriasis. I have never seen a case of psoriasis retain its characters and yet be absolutely universal.

their attendant disagreeably smelling discharge; and it is, as a rule, more amenable to treatment. Pemphigus foliaceus is most common in women, P. rubra in men. It must be borne in mind that the bullæ in pemphigus foliaceus rupture so quickly that they are easily overlooked, and that in rare instances pemphigus foliaceus has developed on a pityriasis rubra.

It differs from *lichen acuminatus*, which also is rarely universal, in its rapid spread, the absence of thickening, the abundance and character of its scales, the total absence of papules, its being less influenced by arsenic, and its not beginning with the characteristic papules of lichen acuminatus.

The large and small scale types can be distinguished from the cases of *general desquamation* following erythematous or other eruptions, since, when the scales are once thrown off, there is no renewal of them.

Prognosis.—This is always serious, as it is impossible to predict what course the disease will take, and even when it appears to be doing well sudden relapses may upset previous calculations; still, instead of being uniformly fatal, as at first believed, about half the recorded cases have recovered, some of them from several attacks. Personally, I should say that this mortality is far too high even for universal cases. The partial attacks are, of course, more favorable, but are liable to become universal at any time. The disease is more fatal in children than in adults, and runs a quicker course for good or ill.

In the Hebra type the prognosis is bad as a rule, but it is not so uniformly fatal as Hebra himself thought it.

Treatment.—This must be both external and internal. *External treatment* is of great use both in relieving discomfort and diminishing the congestion. Oily applications are usually the best; I have seen very good results from wrapping the patient up in bandages soaked in linimentum calaminæ, and also from spreading a thick layer of Lassar's paste, omitting the salicylic acid, over the body, and covering with butter cloth. The lactate of lead liniment and the glycerin of the subacetate of lead have also proved useful (F. Lin. 2, Lot. 39 and 40); but if employed great care must be exercised to prevent the patient getting chilled during their application and removal.

Internally.—After correcting, if present, any errors of the digestive system, quinine in full doses is the best treatment in

acute febrile cases. In chronic cases arsenic is strongly recommended, but it often fails conspicuously, and is, I believe, very unreliable. When the patient is losing flesh, cod-liver oil, iron, and a highly nutritious but easily assimilable diet, and sometimes the liberal use of stimulants, are required. Diuretics are strongly recommended by Dr. Tilbury Fox. The course that I have found very successful is as follows: The whole of the body is enveloped in bandages soaked in calamin liniment, which should be slightly warmed in cold weather; the bowels are cleared out if necessary, and then pot. bicarb. gr. 20 is taken every four hours, with acidi citrici gr. 12, and quinæ sulph. gr. 3 to gr. 5 during effervescence. The patient is fed up as much as possible, but stimulants are withheld, as a rule, unless there are signs of vital depression. In all cases rest in bed is absolutely enjoined, and they should be uncovered as little as possible, as they are extremely sensitive to the slightest chill. I consider it highly dangerous for patients with even partial attacks to go about, and indeed treatment is generally unsuccessful until the patient lies up.

Improvement very often does not set in for some weeks, but the treatment should not be changed too hastily on that account, and the mind of the patient should be encouraged to believe that everything possible is being done.

Arsenic may be given towards the end of the attack, if some part of the eruption is slower in going away than the rest, and in cases of long duration; but I never find it advantageous in the earlier stages and very rarely give it at all.

PITYRIASIS ROSEA.*

Synonyms.—Pityriasis maculata et circinata; Herpes tonsurans maculosus (Hebra).

Definition.—An acute, widely spread exanthematic eruption characterized by pale red, slightly scaly patches or circles.

This is one of the less common eruptions, occurring about once in 250 cases in my experience. It was first described by

* *Literature.*—Author's Atlas, Plate XXX. Owing to the delicate characters of the eruption, it is not possible to represent it quite satisfactorily.

Gibert,* and subsequently by Bazin, Hardy, Horand, and other French writers, † and more recently by Duhring ‡ and Behrend. §

Symptoms.—Slight febrile and other symptoms of general disturbance occasionally precede and accompany an acute widespread outbreak of the eruption, and generally there is slight enlargement of the post-sterno-mastoid and submaxillary glands, and in one of my cases of two months' duration the axillary and inguinal glands. Sometimes there is also congestion of the fauces, but in a slowly developing eruption of limited extent general symptoms would be absent. Gilchrist observed in the urine a high sp. gr. and urates in several cases, probably of the febrile type.

As Brocq states, a single primitive patch, usually situated somewhere on the trunk, precedes the general outbreak for a week or ten days in most and probably all cases, though it is not always traceable. Its larger size, and being sometimes the only circinate patch, may indicate it in some cases. The eruption varies in its extent, sometimes being confined to one or two regions, but is generally extensive, and it may be nearly universal. It commonly commences upon the abdomen, but may begin on the upper part of the chest, the side of the neck, and occasionally on the face or arm. Thence it spreads with a varying extent and rapidity over a large area, which may include the whole trunk, neck, and limbs in from two to three weeks, but is thickest on the abdomen and buttocks, and is usually absent or sparse below the elbows and knees, and on the face.

The eruption is scarcely raised above the surface of the healthy skin, and occurs in two forms, the maculate and the circinate.

P. maculata is in small, roundish, oval, or irregular, pale red patches, with ill-defined borders, varying in size from a mere dot

* Gibert, "Traité pratique des maladies de la peau" (Paris, 1860), p. 402.

† Vidal, *Ann. de Derm. et de Syph.*, January, 1882, and the other French writers alluded to.

‡ Duhring, *American Journal of the Medical Sciences*, October, 1880, p. 359.

§ Behrend, *Berlin klin. Wochenschrift*, 1881, No. 38; also Colcott Fox, *Lancet*, September 20, 1884.

up to about three-quarters of an inch in diameter, and thinly covered with very fine scales. This is the form originally described as P. rosea by Gibert.

P. circinata is in oval or roundish patches, with well-defined borders, which, as the patch increases peripherally, soon become more prominent than the center, and the whole is at first finely scaly, and also pale red; but after attaining about half an inch in diameter the center begins to clear, and the larger patches are converted into rings, with pale red, scaly borders, and small fawn-colored centers; still continuing to enlarge, but rarely to more than an inch, the ring is broken and ultimately clears away, leaving only the pale fawn-colored stain. The separate patches may coalesce more or less with their neighbors, and thus irregular gyrate areas of considerable extent be formed. The individual patches vary in size, depth of redness, and amount of scaliness. Interspersed among the large patches are small spots from about the area of a measles papule upwards, and these enlarge peripherally to form the larger lesions. The gradation of the development of the whole process may be thus traced simultaneously, and the eruption may be disappearing on the trunk and still well out on the limbs. The eruption may be so abundant as at first to resemble an exanthem; in the most acute cases the initial papular elements are very abundant. There may be some attempt at arangement in the patches being in parallel sloping lines from the center to the periphery, determined probably by the lines of fissure or the blood-vessels. There is itching at night, or whenever the patient becomes warm, usually only of moderate intensity, but occasionally severe.

The eruption gets well spontaneously, in from two weeks to two months, as a rule, but Vidal had a case which lasted six months, and I have had one even longer, and several of three or four months. Some of these long-standing cases have been kept going by the eruption having attacked one region at a time, and as that ran its course, another region was involved.

Variations.—A variation which materially alters the general aspect is when the papular elements for the most part remain small throughout their whole course, only a few patches or rings being interspersed. The patches also sometimes project, and are more red and scaly than usual. Hallopeau has ob-

served it limited to the lower extremities, and also that sometimes the patches project like wheals; in one of these cases of Hallopeau, the primary plaque was on the thigh two months before generalization.

Etiology.—One-third of the cases are in children, but it may occur at all ages, the extremes in my practice being seven months and seventy years. Sex, position, and season do not seem to have any effect. In short, we are perfectly ignorant of its etiology. Bazin regards it as arthritic. Jacquet states that dilatation of the stomach is a specially common concomitant, and Besnier seems to agree with him, but this could scarcely have any etiological significance. Twice I have seen it in two members of the same family, and Peroni records an epidemic of it, but it is not generally considered to be contagious.

Kromayer records a case of its occurrence on and limitation to the legs after putting on new stockings, but this was probably only an irritant (arsenical?) rash imitating pityriasis rosea.

Pathology.—Vidal ascribes it to a minute fungus, which he calls "microsporon anomœon"; but his description accords more with a micrococcus than a fungus, and micrococci are so generally present in scales that we must pause before we accept it as the *fons et origo mali*, unless the disease can be reproduced from a cultivation of the organism.

Its generalization a week or ten days after the appearance of a primitive patch is suggestive of an invasion of a microbe from without, followed by its multiplication and absorption into the blood stream and general distribution.

Anatomy.—According to Unna* in the early stage there is a parakeratosis and loss of the granular layer with diminished renewal of the epithelium by new-formed prickle cells, as compared to a psoriasis. There is marked dilatation of the vessels of the superficial plexus with edema, and an abundance of new connective tissue cells, with two or three nuclei, beyond what the clinical appearances suggest. The leukocytes are sparse, but there are some plasma and mast-cells. All these changes are accentuated in a more advanced lesion; there are even microscopic vesicles, and he compares the process to that of flat papular seborrheic eczema, but with more edema and spindle cell multiplication, and no micrococci or other recognizable microbe in the scales.

Blaschko† considers that the most characteristic feature is an agglutination of cells in the stratum lucidum and stratum corneum, in which

* "Histopathology," p. 268. † *Annales*, vol. x. (1899), p. 1250.

there may be from three to five cells fused together with a common nucleus. There is mitosis even on the horny layer as well as the upper rete layers. The process begins in the derma and in the rete, the parakeratosis comes later. No micro-organisms were discovered. Meyer examined four cases and agreed generally with Blaschko, but he had found in one case in a lymphatic lacuna a series of cocci in columns, and also in the infundibula of the glands. In three cases he had found spores like Unna's flask bacilli.

Hollmann,* who has examined lesions at different stages, found very different appearances, according to the stage. The process begins in the derma with marked vascular dilatation of the superficial plexus and perivascular cell infiltration in the upper part of the corium, the epidermic changes being slight at this stage, but subsequently the epidermis undergoes the spongioid transformation of the epithelium, similar to that found in moist forms of eczema by Unna.

Diagnosis.—The pale red tint, the slight scaliness and elevation, the widely spread distribution, the occurrence in flat papules, patches, or circles, and the tendency to spontaneous involution, make up the distinctive features of the disease. Vidal considers P. rosea is a separate disease from P. maculata and circinata, the former running a more definite course, the latter alone possessing the special organism; in this respect few agree with him, most authors regarding them as identical diseases, and attaching a secondary importance to the organism.

From *early squamous and circinate syphilids*, which it most resembles, besides the staining and concomitant symptoms of syphilis, the scaling and infiltration are much greater in the syphilid, and the eruption is of slower development and course. The presence, in some cases of P. rosea, of enlarged glands and congested fauces requires care and the consideration of all the symptoms taken together to avoid mistakes.

The circinate patches are somewhat like *psoriasis*, but much less elevated, much less scaly, lacking the hyperemic papillæ, and usually not at all conspicuous in the usual psoriasis positions. The circinate form may be very like seborrhea papulosa, but this eruption is almost limited to the middle of the chest and back, and is never on the limbs, has a papular border, and is primarily papular; moreover, it will last for years if untreated, while P. circinata gets well in a few months at the most, and usually in a few weeks. The large number of patches and

* "Histopathology of Pityriasis Rosea." Hollmann, *Arch. f. Derm. u. Syph.*, vol. li. (1900), p. 229. Abs. in *Annales*, vol. i. (1900), p. 1103.

extent of distribution, the rapid development, and the absence of the trichophyton fungus distinguished it from tinea circinata, with which it was confused, even by Hebra.

Prognosis.—This is always favorable, the disease getting well spontaneously in all but a very few cases, and even in those is amenable to treatment.

Treatment.—Whilst most cases get well spontaneously, others do not, and no patient would be satisfied with inaction for several weeks, especially as itching is sometimes a marked symptom. Salicin internally has certainly influenced involution in my hands, fifteen grains three times a day having produced an immediate effect on a rash which had persisted for several weeks and in one case for months.

To allay the irritation the surface may be sponged with a lotion of liq. carb. deterg. and liq. plumbi subacet. āā ʒiss to aq. rosæ ℥viij; or calamin lotion with ♏x liq. carb. detergentis may be painted on with a shaving brush and allowed to dry. Sponging first with a watery solution of hyposulphite of soda ʒij to ℥viij, and directly after with a solution of tartaric ʒi to ℥viij, *i. e.*, the nascent sulphur treatment, has appeared to be of great service in my hands. S. Mackenzie advocates boric ointment.

Weak Harrogate sulphur baths would be of service if they were easily accessible.

EPIDEMIC EXFOLIATIVE DERMATITIS.*

Synonym.—Epidemic eczema; Epidemic skin disease.

In the autumn of 1891, chiefly in July and August, a remarkable epidemic eruption made its appearance in the Paddington (163 cases), the St. Marylebone (193), and the Lambeth (25) Poor Law Infirmaries. In the Hanwell Lunatic Asylum also,

* *Literature.*—A well-illustrated monograph by Savill, 1892; and in *Brit. Jour. Derm.*, vol. iv., 1892, in the February, March, and April numbers. There were also many communications on the subject in the *Lancet* and *Brit. Med. Jour.*, in vol. ii., 1891, vol. i., 1892, and vol. ii., 1894, including another article by Savill and a comprehensive leader in the *Lancet* of September 29. Also *Clinical Journal*, October 30, 1894, a Clinical Lecture by Dr. Lees. "On Histology," Echeverria. *Brit. Jour. Derm.*, vol. vii. (1895), p. 9; and *Monatsh f. Derm.*, vol. xx. Savill, "Nouvelle Iconographie de la Salpetrière."

there were 38, in St. Mary's Hospital 4, and a few other isolated cases. A similar outbreak occurred in the Greenock Parochial Asylum in 1888.

Smaller outbreaks have occurred since, especially in 1893 in the Paddington and Fulham Infirmaries and in the Bethnal Green Workhouse (86) and the City of London Infirmary. There have also been sporadic cases. A curious group occurred at Loughton, in a family living in a cottage on a hill, under Dr. Butler Harris, who sent the most severe case to me for diagnosis. The father, mother, and children were attacked. The one I saw was a boy, æt. eleven, who had several relapses. Careful investigation showed that they got their milk from a cow which was watered at a pond contaminated by a neighboring cesspool. The milk supply was suspected at several of the infirmaries, and although some evidence was obtained favorable to this theory of origin, it fell very far short of being conclusive, and in one institution the disease continued to spread after the milk supply was stopped.

The disease occurred in two main types—a moist one, resembling eczema, and a dry one, indistinguishable from pityriasis rubra. Dr. Savill gave an elaborate account of the disease from the 163 cases under his care at the Paddington Infirmary; and, thanks to him and Dr. Lunn, I was able to examine a large number of cases both at Paddington and St. Marylebone. Although in two-thirds of Dr. Savill's cases there was more or less discharge, there was always free exfoliation of the epidermis, and many were typical examples of pityriasis rubra, as far as appearances are concerned, and there was a heavy mortality among the old people. A few of the attendants on the sick, a few children and young people, were attacked; but the great majority were middle-aged or old persons of both sexes, in the infirmaries for other diseases. As a rule the eruption was not preceded by any noticeable signs or symptoms, and there was no fever, except towards the end in severe and fatal cases. Among antecedent or concomitant symptoms anorexia was common; some had vomiting, some diarrhea, some both; and a few had sore throat. In nearly all whom I personally examined, except the very aged, the occipital glands and those down the neck were enlarged and sometimes tender, and occasionally the submaxillary glands were also enlarged. This enlarge-

ment could not be accounted for by the eruption in the head, as it occurred in some cases where the head was almost free. The parts most frequently first attacked were some portion of the upper limb, the face, and scalp, fifty-seven per cent. commencing in one or other of those parts, the exposed positions in fact; in only seventeen per cent. were the lower limbs first attacked, and the rest began in various positions. The first symptom was a sensation of itching, then numerous acuminate red papules appeared, irregularly grouped, and seated at the follicles. These either remained unchanged for a time, or some of them coalesced into red patches, and the eruption spread over the body, sometimes slowly, sometimes rapidly, until the whole surface was affected without any interval, with a deep red infiltration, covered with abundant flaky scales; and thus, but for the history, a typical pityriasis rubra was presented. About half were thus universal. In many vesicles formed on the papules on the second or third day, and discharged, producing a moist eczematous surface. A less frequent mode of commencement was the formation of round, well-defined, erythematous patches. In six of Savill's cases small flat papules appeared, which enlarged peripherally and formed a circular red ring, inclosing a depressed area covered with minute vesicles. While the majority were symmetrical from the first, in some a local origin could be traced, and then after some days there was generalization. A few of these of local origin were aborted by painting with collodion or iodin.

The orbits were often much affected, and then conjunctivitis was usually present. The disease in the universal cases usually ran its course in from six to eight weeks, but many had relapses, and a few had actual second attacks. In those who recovered there was very deep pigmentation of the skin, and all the nails and hair were shed in the severe cases, in one case even where no rash was observed on the scalp. In the fatal cases—thirteen per cent. in the Paddington, and five per cent. in Marylebone Infirmary—death was usually by exhaustion, preceded by subsultus tendinum, shallow respiration, and coma. Some had complications, such as pneumonia, gangrene of the feet, etc.; albuminuria was present when there was a large area of skin involved. No cause, after the most diligent search, could be assigned for the outbreak; but from the scales and

fluid from unruptured vesicles both Savill and Risien Russell isolated an organism very like staphylococcus pyogenes albus, but, unlike the latter, they were diplococci in rod-like segments, did not liquefy gelatin, and had not the specific effect on animals that staphylococcus albus has. Risien Russell could find no such organism in the blood of an ordinary pityriasis rubra case. Echeverria claims that there are some very special changes in the nuclei of the prickle cells. Treatment had little effect in shortening the course of the disease, but for the severe cases treatment on the same lines as that for pityriasis rubra would be most helpful.

CHEILITIS EXFOLIATIVA.*

Deriv.—χεῖλος, the lip.

Synonyms.—Exfoliative inflammation of the lips; Psoriasis labialis (Bateman); Pityriasis des lèvres (Rayer); Eczéma exfoliant des lèvres (Besnier-Doyon).

Although this rare affection was known to Bateman and Rayer, and was fully and accurately described by the latter, it has only gained attention of late years from the writings of Besnier and the other writers mentioned in the footnote. It is a rare and very rebellious disease, quite distinct from ordinary eczema of the lips, but according to Besnier is closely associated with seborrhea of the face and scalp.

It affects primarily and chiefly the lower lip, but the upper may be secondarily involved in a minor degree. It is confined for the most part to the red of the lips, but I have seen it extending slightly inwards on the mucous membrane, while the extreme outer border was free. The lip is always swollen and covered with a dry yellowish or brownish crust, which may be thin and flaky or up to half an inch thick (Galloway). Beneath the crust the lip is dry, glazed, and cracking, sometimes granu-

* *Literature.*—Kaposi Besnier-Doyon's edition, vol. i. (1891), p. 664, note, with references. Unna, Balby's case, *Monatsh. f. prak. Derm.*, vol. xi. p. 317. Galloway, *Brit. Jour. Derm.*, vol. vii. (1895), p. 113. Jamieson, *Brit. Med. Jour.*, December 7, 1895, with colored plate. Stelwagon—"Persistent Exfoliation of the Lips," two cases, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xviii. (1900), p. 268.

lar and bleeding, but seldom oozing. The intensity of the inflammation and consequent crusting varies considerably, the ameliorations leading to fallacious hopes of cure always doomed to disappointment, so far no case having been really cured. Galloway's case lasted fifteen years. Besnier always found it in association with seborrhea of the face and scalp, and it was so also in Galloway's and Stelwagon's cases. In Jamieson's case seborrhea was absent, and in my own was not present on the face, and I have no note about the scalp. Still it is evidently an important factor. In my own case, a man æt. twenty-seven, the lip was irritable for a year, and much picked, therefore, before the disease began. Dyspepsia has also been present in a large proportion; age and sex are not important factors.

Pathology.—This is unknown. Stelwagon found various microbes, but was unable to isolate the pathogenic one. Leith examined Jamieson's case, and found such marked thickening of the prickle cell layer as to suggest to him a mild form of epithelioma, but the appearances were quite consistent with those of chronic inflammation, which is much more probable.

Treatment.—This has been most unsatisfactory, temporary amelioration only having been obtained. Stelwagon painted on lactic acid, at first diluted, and then full strength every six hours for four applications, and repeated it in ten days, using an ointment of ichthyol and acetanilid. Under this treatment the lips kept healed for five weeks, when the report was made. Jamieson also had previously used lactic acid with benefit, following it with salicylic wool, fastened on with flexile collodion. Besnier got the lips smoother with borax and rhatany, and then covered them with traumaticin. Any digestive troubles and seborrhea should be most carefully attended to.

LICHEN.

Deriv.—λειχήν, a lichen.

The term lichen was applied by Willan and his followers to a heterogeneous collection of diseases, to some of which it still clings, with the single property in common that papules are the

conspicuous feature in some part of their course. The lichen class is now restricted, as Hebra proposed, to those diseases in which inflammatory papules, undergoing no metamorphosis during their whole course, constitute the main feature of the disease. Under this definition come:

L. planus (Wilson).
L. variegatus.
L. ruber acuminatus (Kaposi) seu Pityriasis rubra pilaris (Devergie).
L. scrofulosus.
L. pilaris seu spinulosus.

Before describing this group it is desirable to state briefly what it does not include, as much confusion is produced by the loose way in which the term has been, and is still applied, by those who have not paid special attention to the subject. Each affection is fully described in its proper place.

Acute **L. Simplex** is still regarded by some authors as a definite disease. It is a follicular hyperemia, and may involve the hair, sebaceous, or sweat follicles. Chronic L. simplex (Vidal) is regarded by most French authors as a separate disease, but Besnier does not accept it, nor can I. It is the lichen circumscriptus of old authors, and Brocq and Jacquet describe it as a chronic circumscribed neurodermite, on the theory that it is a special reaction of the skin to scratching, constituting what they call primary lichenification, itching without eruption being the first symptom. The lesions are circumscribed patches chiefly occurring about the neck or groin. Many of these cases are really lichen planus, and in not a few cases, after remaining as a single thickened patch for weeks, months, or years, other lesions of lichen planus arise elsewhere. Some cases are the remains of a chronic squamous and probably seborrheic eczema. **L. agrius** is an obsolete term for an acute follicular eczema.

L. Urticatus is the urticaria of children, in which the wheals are succeeded by inflammatory papules, and in some cases the wheals themselves are not larger than papules. **L. pilaris** is often used instead of keratosis pilaris. Inflammatory **L. pilaris** is the equivalent of Devergie's lichen spinulosus.

L. lividus is hemorrhage into the hair follicle or follicular purpura. **L. tropicus,** or prickly heat, is an inflammation of the sweat apparatus, and is therefore a form of miliaria. **L. strophulosus,** "red gum," is also a sweat rash, or miliaria of young infants. **L. syphiliticus** is applied to two forms of papular syphilids, in which the lesion is at the hair follicle.

L. Circinatus is one of the forms of seborrheic dermatitis of the body. Seborrhea papulosa.

Lichenification.—This term has come into use recently through the advocacy of Brocq and Jacquet. It is applied to the thickening of the skin, which is not uncommon in chronic dry inflammations, *e. g.*, eczema, lichen planus, pityriasis rubra, etc., attended with itching and consequent scratching, whereby the natural lines of the skin are deepened and the patch, whether circumscribed or diffuse, is quadrilated, or broken up into squares, bounded by these deepened natural lines. Brocq classifies these thickenings into primary and secondary, diffuse and circumscribed, but these seem to me to be unnecessary complications of what is otherwise a useful term for a certain kind of thickening of the skin.

LICHEN ACUMINATUS.*

Synonyms.—Lichen ruber (Hebra); Pityriasis rubra pilaris (Devergie); Lichen ruber acuminatus (Kaposi).

Definition.—A primarily non-inflammatory (?) disease characterized by follicular, conical, or round papules with horny centers, tending to become general or even universal in distribution.

The first clearly described case was that communicated by an Englishman, Claudius Tarral, to his former master, Rayer, from a case in St. Bartholomew's Hospital in 1828.

* *Literature.*—Colored illustrations under the above synonyms are published in Bärensprung's and Hebra's Atlas; see footnote, p. 418. Hebra's large Atlas, Plate II., Lief. iii., is not a good example. Neumann's Atlas, Plate XLI., copied by Morrow, Plate LVIII.; also Monograph, *Archiv f. Derm. u. Syph.*, vol. xxiv. (1892), p. 3, very good.

Hebra, in the first edition of his work, described the disease under the name of lichen ruber, but subsequently mixed up other diseases with it. Devergie described it independently under the title of pityriasis rubra pilaire; this name is still retained by French authors, of whom Richaud, Besnier, and Brocq may be especially mentioned, who have added much to our knowledge of the disease.

Kaposi again, under lichen ruber acuminatus, has introduced a further complication of the subject, and in the last twelve years a great controversy has arisen as to whether the three descriptions related to one or to separate affections. Owing to the paucity of cases recognized in England up to about 1890, English writers have been content to watch the fray and record the points made by the several adversaries; but in America Taylor and Robinson of New York have joined in with valuable cases in support of their contributions. We are still far from unanimity, and those who wish to work it out for themselves may consult the literature to which references are given and

Taylor's own case, Plate LIV. of his Atlas. Also *N. Y. Med. Jour.*, January 5, 1889; Tilbury Fox's Atlas, Plate XXXIX. (back of the hand), better shown in *Annales de Derm.*, 2d series, vol. x., Plate III. Author's Atlas, Plate XXXIII., Figs. 1 and 2, shows well the palmar condition and the typical papules in an early stage. The comparative study of these plates will do more to convince the student of the unity of the disease under its several designations than reams of letterpress. Kaposi "Ueber die Frage des Lichen," *Archiv f. Derm. u. Syph.*, vol. xxi. (1889), p. 743; and vol. xxxi. (1895), in "L. Ruber Acum. u. L. Ruber Planus." Hans von Hebra, "Lichen Ruber and its connection with Lichen Planus," *Brit. Jour. Derm.*, March, 1890. Neumann, "Ueber Lichen Ruber Acuminatus, Planus, und Pityriasis Rubra pilaire, *Archiv f. Derm. u. Syph.*, vol. xxiv. (1892), p. 3. "Zur Stellung der Pityriasis rubra pilaris, u. des Lichen Ruber Acuminatus." Neisser, "Zur Frage der Lichenoiden Eruption," republished from *Trans.* of Fourth German Derm. Cong. Also in *Trans.* Derm. Section, xi. Int. Cong., Rome, 1894. Besnier's valuable monograph republished from *Annales de Derm. u. Syph.*, vol. x. (1889), with colored illustrations, gives a very complete clinical account, and the history to date. Also a *résumé* in Kaposi Besnier-Doyon ed. (1891), vol. i. p. 385; Brocq, 1892, p. 644; and various monographs. R. W. Taylor, "Lichen Ruber as observed in America, and its distinction from Lichen Planus"; very well described and highly illustrated cases in the *N. Y. Med. Jour.*, January 5, 1889, with histology. A. R. Robinson, "The Question of Relationship between Lichen Planus and Lichen Ruber," *Jour. Cut. and Gen.-Ur. Dis.*, vol. vii. (1889), January, February, and March, colored illustrations.

others which open out from them, but the following is the outcome of it all, as I view it.

The identity of the lichen ruber acuminatus of Kaposi with the pityriasis rubra pilaris of the French school was no longer open to doubt to those who were present at the Dermatological Congresses of 1888 and 1892. At the latter the same case was claimed by the respective parties for their own disease. There remained the question whether Hebra's lichen ruber was the same disease as Kaposi's lichen ruber acuminatus. The latter said it was, and having worked with Hebra for so many years, he of all men ought to know. The difficulty is that Hebra's first thirteen cases, which Kaposi never saw, were attended with grave constitutional symptoms and ended fatally, which is scarcely, if ever, the result of lichen acuminatus. As we see it now, it is considered to be a comparatively benign disease as far as general symptoms are concerned. Moreover, Hebra himself in his latter descriptions mixed up Wilson's lichen with his own disease, and *possibly* some other conditions as well. Fortunately, however, Hebra has published plates of two * of his early cases, which show that they were identical with those of the other German, French, and American writers.

The above brief historical sketch was necessary because in the second edition of this work the descriptions of the French and German authors were provisionally kept apart until the matter was more completely threshed out.

Of late years, although the disease is a rare one, a good many cases have come under my notice in my own practice and that of others, but I still adhere to Brocq's description in the main, supplementing and commenting upon it when English experience differs from his.

Symptoms.—The most characteristic feature of the disease is the development of hard, dry papules seated at the hair follicles; they may be pale yellow, pale pink, red, or brownish-red, and

* Bärensprung's and Hebra's Atlas, Erlangen, 1869, Plates XIV. and XV. Only two fasciculi of this little-known Atlas were published. Plate XIV. shows the fine papules on the trunk and the scaly incrustation of the face so often depicted and described by French authors in pityriasis rubra pilaire; while Plate XV. shows the closely serried rows of dull red rounded papules, exactly like R. W. Taylor's case, *loc. cit.* French authors claim Taylor's case as identical with Devergie's pityriasis rubra pilaire.

with a lens show an atrophied hair in the center, surrounded by a sort of horny sheath, which penetrates into the follicle. The papules vary in size from a small pin's head to a millet-seed, occasionally to a hemp-seed, and are seen most abundantly on the limbs, chiefly on the back of the hands and on the first, and slightly on the second, phalanges, the wrists, forearms, elbows, and knees; on the body they are most abundant about the waist and lower part of the abdomen, but are not confined to these regions, and are often in the most typical form on the upper part of the trunk.

These papules are not the primary phenomena, as a rule; more frequently the first parts attacked are the palms and soles with scaly patches like psoriasis palmæ, which afterwards coalesce, and the whole of the palms and soles are diffusely red, and more or less rough or scaly, and subsequently keratosic. Or the onset may be on the scalp with an apparently seborrhea sicca, which may form a thick, whitish, adherent crust, or, which is less frequent, the face is the first involved, and the forehead and orbit become covered with fine, firmly adherent scales, which ultimately spread all over on the limbs and trunk. The characteristic conical papules soon follow, and as the disease progresses, they become first rounder and then flattened (Taylor), increase in numbers, crowding together until they become confluent patches with discrete papules round. The patches are pale or yellowish-red, sometimes deep red, slightly thickened, and uniformly covered with scales, which are usually fine and branny, very like psoriasis on the elbows and knees, but they may be glistening and adherent, or in rare instances flaky. Deep folds are formed at the joints, and the enlarged papillæ may have an ichthyotic appearance. Pruritus is absent or only slight. In extreme cases the eruption is universal, and the whole surface dry and scaly like a pityriasis rubra, and at the worst, small blackish conical elevations may be found round the hairs on the back of the fingers. The face, if attacked, may, according to Besnier, be either white with fatty scales, or red and branny, xerodermic, or present a combination of these alternations. The nails are softened, grayish, with longitudinally yellowish striæ. Neumann says the nails are raised up by new nail substance, and laterally compressed, a condition I have also met with, the color being opaque yellow. There

may be *hyperidrosis*, but the general health is often good. The course is slow, irregular, and uncertain, from temporary ameliorations, even apparent cures being followed by inexplicable aggravations or recurrences.

I have seen a case of the xerodermic type in which the whole face was pale red and brannily scaly, while typical papules of a yellowish tint thickly covered the upper part of the chest in rows and groups, while they were only scanty on the limbs.

In another case, while the papules were convex or conical above the level of the umbilicus, below it they were flat and circular in outline, and had a horny punctum in the center slightly projecting above the rest of the papule. It is the presence of these flat round papules along with the conical ones which has led some authors to regard these cases as a combination of lichen planus and lichen acuminatus,* but there are never flat circular papules in large numbers in lichen planus, the outline of the papules being angular in this disease.

In a third case there was a dense scaly crust over the elbows and knees, very like a psoriasis at first sight, but denser and more ichthyotic in character, but the redness of the rest of the leg distinguished it from ichthyosis. On the chest also there was an inserted triangle of dense scaliness, but on the shoulders the papules were distinctive. The case subsequently developed into pityriasis rubra, and the papular origin was quite lost.

In a boy, with a very partial attack affecting the face and upper part of the trunk, there were a large number of papules of lichen spinulosus about the neck and shoulders. In Taylor's case the papules were of a brownish-red hue, and in some parts in closely serried rows in the natural lines of the skin, exactly like one of Hebra's cases. In a case sent to me by Savill the onset was marked by prostration, malaise, and vomiting, and other digestive derangements, and it ran a short course. Of late too much stress has been laid on the absence of constitutional symptoms; while true of the majority of cases, much depends as to whether the disease develops slowly or rapidly.

Lichen ruber, as Hebra described and named it, when general, is attended with severe symptoms, such as shivering,

* Kaposi, C. Boeck, and Hans Hebra may be specially noted as having published such cases, also Hallopeau, but he agrees with my view that there is not a combination of two diseases.

rigors, general aching, and itching, followed by profuse perspiration.

The eruption consists of disseminated, firm, conical red papules, from a pin's head to a millet-seed in size, smooth at first, but soon capped with minute scales. They feel, when closely set, like a nutmeg-grater, but at first they are widely separated, the intervals becoming gradually filled up with fresh papules, which itch intensely. The process is rather acute at first, and spreads over the whole trunk, though occasionally it affects the flexures alone. By a repetition of the process the whole skin may be involved, so that it becomes reddened, scaly, and much thickened, at first in patches, and ultimately in a diffuse infiltration interfering with the movement of the joints. The skin of the palms, soles, fingers, and toes is worse than the rest, and deep fissures extend to the corium. The nails of both fingers and toes are affected, being sometimes of a dirty brown color, rough, flaky, and breaking off short, and much thickened if the nail-bed is involved; while, if growing out only from the matrix, they are thin, brittle, longer than the finger, and lighter-colored than normal. The larger hairs of the head and trunk are not involved. The worst form of the generalized disease, if untreated, leads to marasmus and death, but even in these cases the controlling power of arsenic and judicious local treatment have materially improved the chances of cure.

The above follows Hebra's description of the most severe forms,* but all these developments are only seen in old-stand-

* Neumann draws the following distinctions between *lichen ruber* and *pityriasis rubra pilaris*. Comparing the papules on the trunk, those of L. ruber are persistent, pin's-head-sized, brownish-red, and glistening, but slightly scaly, with a central pit. When they disappear they leave a brownish-red, deeply furrowed, infiltrated surface. In P. rubra pilaris the papules in this part are punctiform, with thin scales; they soon flatten down, and leave a soft, non-infiltrated, pale red, scaly surface. On the forearms the papules are larger, and on the backs of the phalanges millet-seed-sized, and when the scale comes off are pitted, so that the surface is cribriform. The papules are limited to the hair follicles.

In L. ruber the nails are yellowish-brown, thickened, brittle, and uneven, while the thick hairs are unaffected. In P. rubra pilaris the nails are only secondarily affected, being raised up from beneath by new nail substance, and laterally compressed. In universal L. ruber nutrition is profoundly affected. In P. rubra pilaris it is unaffected. Itching is a

ing cases. If suitably treated, it will not attain to this intensity, and may be cured fairly easily. In milder cases the face may escape or be simply scaly, the palms and soles also are only badly attacked late in the disease, but flat, transparent papules on the palms and soles and flat, itching erosions on the tongue, are described by Unna as occasional manifestations.

Etiology.—Practically nothing is known as regards the etiology of either the mild or severe cases. It is much more frequent in Vienna and Paris than in England, and is more common in males.

It generally attacks young adults, but is not uncommon in older persons and may be met with in childhood; the youngest was a case which West showed at the London Dermatological Congress of 1896, æt. three years, and one by Rasch * of Copenhagen, who records a case of a child of two and a half years.

The characteristic papules on the back of the fingers are often absent in young children, probably from the imperfect development of the hair follicles, but du Castel ‡ had a case of a child of five with the disease of two months' duration in which the characteristic papules on the back of the fingers were well marked. The case commenced with redness and complete desquamation of the palms and soles, leaving the surface bright red, dry, and thinned.

The *pathology* is unknown, but in my opinion it has no relationship to lichen planus.

Anatomically, according to Jacquet and Taylor, there is an increased cornification of the epithelial wall of the orifice of the follicle, to which the dermal inflammatory changes are probably secondary. Unna states

marked symptom in L. ruber; in P. rubra pilaris there is no itching or other subjective symptom. Arsenic is almost a specific in L. ruber; it is often injurious in P. rubra pilaris, and must always be given with caution.

Emollient applications smooth down the papules of P. rubra pilaris, but have very little effect on L. ruber.

The above is in my opinion arrived at by comparing extreme examples of the two conditions, and if the intermediate links are studied the distinctions break down.

* *Dermatologisches Centralblatt*, second year, No. 7. Abs. *Brit. Jour. Derm.*, vol. xi. (1899), p. 449.

† *Annales de Derm. et de Syph.*, vol. x. (1899), p. 444.

that the horny papule may form at a sweat orifice as well as at a hair follicle, or independently of either, that there is also a general hyperkeratosis of the surface, and that the redness of the skin is without a corresponding inflammatory infiltration. The last statement cannot be true for all cases, as in some inflammatory phenomena are undoubtedly present.

In Hebra's form the anatomy has been repeatedly investigated by Neumann, Biesiadecki, and others; their observations, made in an advanced stage, showed a chronic inflammatory process deep in the corium, in and around the hair follicles, whose sheaths by proliferation of the cells were enlarged into knob-like and spigot-shaped excrescences. The other changes were such as may be found in other chronic forms of dermatitis, *e. g.*, prurigo.

Diagnosis.—The characteristic features are: in mild cases, the follicular papules, with a horny plug in the orifice of the follicle, which can be picked out, and produces a cribriform aspect; the dry scaliness of the palms, soles, scalp, and face; the inconspicuous inflammatory changes; and, finally, the absence of any disturbance of the general health—in other words, its benign course as compared to most forms of universal dermatitis. In the severe form the development is often rapid, with marked constitutional symptoms, and the papules are crowded together like a nutmeg grater, and often are of a dull red color.

The diseases it most resembles are pityriasis rubra and psoriasis, and some of the slight cases resemble a mild form of ichthyosis.

From pityriasis rubra it would be distinguished by the trifling hyperemia as a rule, the small scales, the presence of the papules and of the diagnostic blackish cones on the back of the fingers, the absence of constitutional disturbance, and its uniformly benign though chronic course.

Only the most crusted cases would be mistaken for psoriasis. There is not the spongy character in the dense crusts, some of the characteristic papules could be found somewhere; and the peculiar incrustation about the face and scalp would be present. Only the mildest cases would be mistaken for ichthyosis. There is sure to be some redness, though it may be slight, and the development would be comparatively recent instead of dating from infancy, as ichthyosis does.

Prognosis.—Most cases run a slow course, ultimately ending in recovery unaided by treatment, but relapses may occur even after years of freedom. Cases of rapid development and in-

volving the entire cutaneous surface may be fatal, as in Hebra's series, but they are quite exceptional.

Treatment.—Effort should be made to restore the sweat secretion by subcutaneous injections of pilocarpin nitrate gr. 1-6, and active exercise combined with alkaline baths, frictions with soft soap, followed by pyrogallic acid, which Brocq says is especially efficacious, or oil of cade or resorcin, which can be used over larger surfaces than pyrogallic acid, or mercurial applications, which are also valuable for limited areas. In short, the treatment is that for psoriasis, except that arsenic is contraindicated in an early or developing stage on account of its tendency to increase keratinization of the tissues, which is already excessive, and marked aggravations have followed its injudicious use. Brocq says, however, that arseniate of soda may be beneficial sometimes, if given cautiously.

I have found the administration of thyroid extract a valuable adjuvant to local treatment. As usual, the initial dose should only be five grains a day, with a weekly increment according to the tolerance of the patient, and it is rarely necessary to exceed fifteen grains a day. Graham Little has had a good result in one case with thyroid. If active inflammation sets in, the treatment would be that for pityriasis rubra.

In the severe Hebra type the Vienna authorities consider arsenic a specific for the disease, until it has gone on too far, so that the patient is emaciated and exhausted. Hebra lost all his generalized cases until he tried arsenic.

This discrepancy in the effect of arsenic is one of the chief arguments of those who still hold that lichen ruber and lichen acuminatus are different diseases, but is, in my opinion, of small weight, as it is common to see the same drug aggravate one stage or form of a disease and ameliorate another. Arsenical advocates say that it may be needful to give it in heroic doses for a long period in the form of liquor arsenicalis (♏v to ♏xv, or more if the patient's stomach can bear it, three times a day, of course largely diluted), or, as Köbner suggests, ♏iv of Fowler's solution to ♏xx of distilled water injected hypodermically every day for three or four weeks, or in the form of Asiatic pills, three, gradually increasing to ten a day, each pill being equal to one-twelfth of a grain of arsenious acid. Kaposi gave as many as 4500 of these pills before a cure was

effected, and without evil consequences. Personally I should defer using it until other means had failed. Arsenical hypodermic injections are very painful.

LICHEN PLANUS.*

Synonyms.—Lichen ruber planus; Lichen psoriasis (Hutchinson).

Definition.—Lichen planus is characterized by the presence of inflammatory papules, of which the most characteristic are flat and angular, either discrete or confluent, and of some shade of red.

Lichen planus was first described by Erasmus Wilson, and is in the great majority of cases a well-characterized affection. It is a rather uncommon disease, forming one per cent. of hospital cases and two per cent. in private practice in this country.

L. planus may be acute and general, or chronic and limited to a few regions. The chronic is by far the more frequent, and will be first described.

Symptoms.—Lichen planus presents itself under two aspects, viz., papules and patches, the patches resulting from the aggregation of the papules. It is usually localized to a few regions, but it may be general.

It appears as flat, slightly raised, discrete papules, varying from one-sixteenth to a sixth of an inch in size, of angular outline, smooth, shiny surface, with a minute horny punctum or a small depression in the center of many of them, and of a lilac hue, which is very suggestive of the disease. In fully developed papules Wickham's signs of striæ and grayish puncta on the surface of the papule may be recognized. The angular shape is determined by the boundary lines being formed by the slightly deepened natural lines of the skin.

* Author's Atlas, Plate XXXII., Fig. 1, illustrates a subacute case with slightly scaly papules (unusual); Fig. 4, the hypertrophic form, Plate XXXI. shows a generalized acute miliary L. planus; and Fig. 3, Plate XXXIII., a generalized less acute form. Owing to the small size of the primary lesions and their shining appearance, it is impossible to give an accurate delineation of their characters, and only the general aspect and arrangement is portrayed in any Atlas in which the attempt has been made.

They are either scattered, or arranged in irregular groups, lines, bands, or circles. The lines usually run transversely to the limb, determined also by the natural markings of the skin, but traumatism, chiefly friction or scratching, may determine the direction of lines in the length of the limb, and bands of eruption generally run parallel to the limb axis.

By the close aggregation of the papules, and by their increase in number, not in size, patches are formed, generally of small area, but large sheets of infiltration may be produced. These patches present a very different aspect to the papules. When small they may be roundish, with a depressed center, but when large they have an irregular, well-defined outline, are raised considerably above the surrounding skin, have a purplish hue, and are covered with thin scales, a feature rarely seen in the papules.

The commonest situations for the eruption, and where it most frequently commences, are the flexor aspect of the wrist and forearm, and next the inner side of the knee, but no external part of the body is altogether exempt from attack, and even the mucous membranes are involved in many cases.

Next in order of frequency to these two positions come the leg below the knee, the ankle and foot, the extensor surface of the arm, the flank, hip and lower part of the abdomen, the palms, soles, and wherever there is friction or irritation. The rarest seats on the skin are the face and scalp, fingers and outside of the lips. When the fingers are attacked, the nails also may become involved, but there is nothing distinctive.

Symmetry, more or less obvious, is the rule, but the lesions may be unilateral; and sometimes the eruption may remain limited to a single patch for a long time before other papules and patches appear.

The papules and patches on their disappearance leave behind them slight atrophic depressions, with long persistent stains, varying from a fawn color to a bluish-black tint, according to the duration and severity of the inflammation.

Itching of moderate intensity is generally present, and may precede the eruption; occasionally it may be intense, and is very rarely absent altogether; sometimes no defect of the general health can be detected, but more often there is some, usually in the direction of neurasthenia or dyspepsia.

Course.—The disease may last for years, and if untreated tends to spread; and even with suitable treatment requires several weeks, or even months, for its removal, while the most severe generalized form may lead to marasmus and death. It recurs in some people,* but at much longer intervals than in psoriasis, and not so frequently.

The *acute* form (acute miliary lichen planus) may be primary or supervene on the chronic form, but not necessarily spreading directly from the old patches. It is less frequent, not more than one to ten of the slower form; it generally commences on the limbs, but may affect the trunk first. It spreads slowly or rapidly; in the latter case, perhaps covering the whole body in a few days, or even within twenty-four hours. In these, which may almost be called malignant cases, there may be pronounced constitutional symptoms: febrile disturbance and profound bodily and mental depression, sometimes resulting in temporary insanity, and either a very prolonged convalescence, or in rare instances, death by marasmus or complications. These symptoms suggest toxic effects, either primary and producing both constitutional symptoms and rash, or secondary, from the sudden disablement of the whole cutaneous envelope. In the majority of cases the constitutional disturbance is seldom very pronounced at first, but itching is nearly always a prominent symptom, and may be very severe, and by the loss of rest it occasions be of itself a cause of a serious aggravation of the general symptoms. Although acute in its development, it is often chronic in its course, unless the patient takes to his bed, and submits himself to appropriate treatment. The face and scalp are seldom attacked, and the palms and soles often escape. The rest of the body, including the neck, is more or less implicated, but there are generally clear areas. The lower half of the body and limbs is usually more affected than the upper. The papules are usually small, flat, or slightly convex, angular, shining, and of a very bright red, and this is the only condition in which lichen *ruber* planus would be an appropriate title, but it is better omitted altogether. There is a tendency to irregular grouping of the papules, and to follow the natural lines of the skin. Although the papules may be densely crowded to-

*In one of my patients the disease recurred every July for four or five years, and her first attack was fifteen years before I saw her.

gether, their outline is generally distinct for a long time nearly all over the body; but when the disease has lasted some time, the papules coalesce and become covered with small scales, which may almost conceal the red surface beneath. Hallopeau has had three cases with a general redness of the skin, in which the papules had very slight elevation.

Variations, etc.—When developing papules are carefully examined with a lens, in a subacute case, only the smallest areas inclosed by the natural markings of the skin are involved. Their color is often the same as the normal skin, and they are recognizable only on looking obliquely along the surface, by their smooth shining appearance, while, when they develop acutely, they are bright red and often remain small; but the more chronic papules are built up to one-eighth or one-sixth of an inch by the aggregation of these minute areas, with the natural lines of the skin still forming the boundaries of the papules. Their surface is dotted with red points, representing the apices of the hyperemic papillæ below, and minute dilated vessels are visible between the papules, accounting for the diffused red hue observed in some cases. The papules used to be described as having the hair follicles for a center, but this is seldom the case, the hair, if present, being at the side of the papule, and the follicle may not be involved at all. The papules vary from the type in color and shape, but their outline is rarely circular (*vide* Lichen Acuminatus).

Many papules, instead of being simply angular, show minute processes at the edge, like a keloid on a small scale. Instead of being flat, they may be convex, small, large, or moniliform.

In a gentleman * from Brazil an eruption came out soon after his return to England, and when I saw him eleven months later nearly all the body was covered with an eruption of papules the size of a pin's head and convex; they had some tendency to irregular grouping, and while at first sight they looked as if seated at the follicles, a lens showed that the hair was often at the side, not in the center, of the papule.

In model 1435 of the St. Louis Museum, labeled **Lichen obtusus**, the papules on the arm are from a quarter to half an inch in diameter, and lenticular in outline. They may also be more or less conical and slightly scaly. These varieties may

* Private Note-book, B., p. 147.

occur alone, or, what is more frequent, be associated with the characteristic lesions in the other parts. Unna * drew special attention to this form after studying the above model.

In an extraordinary case of Kaposi's,† besides the ordinary papules and plaques, there were thick moniliform bands in the flexures of the limbs, on the abdomen, and on the neck. In the last position, which was completely surrounded down to the clavicles, they were like hypertrophic burn cicatrices. Microscopically, the bands were made up of dense cell infiltration, chiefly in the deep part of the corium, without any connective tissue formation. No cause could be discovered for this unusual development. Róna has reported a similar case to the Buda-Pesth Medical Society.‡ Dubreuilh, G. H. Fox, and Bukovsky have also met with similar but less extreme cases. It is open to discussion as to whether these cases really belong to L. planus; their general arrangement and the partial involvement of the face are against it, but Kaposi described it as a variety of L. planus, and the others have followed him.

L. Planus Erythematosus would be a suitable appellation for a very rare variety, of which I have seen two instances. In this the lesions are of a deep crimson tint, very soft to the touch instead of firm, and look more like an erythema than L. planus, as they can be temporarily obliterated by pressure, and the epidermis is evidently not involved. One case was a gentleman past middle age. The eruption had existed for a year, and was in closely aggregated, small papules, limited to the groins and large areas on the trunk. The other was not under my care, and the disease had been present over two years, and was very extensive. There was also much telangiectasis of the face and mouth. S. Stirling § has also described a case of this kind.

The papules may be pale or even white in rare cases. In a

* "Clinical History and Treatment of 'Lichen Ruber,'" *Medical Bulletin*, Philadelphia, 1885. An interesting essay, with many cases.

† *Viertelj. für Derm. u. Syph.*, vol. xiii. (1886), p. 571, "L. Ruber Moniliformis," with colored plate.

‡ Quoted by Kaposi, *loc. cit.*, vol xiv. (1887), p. 279, *loc. cit.*, vol. lvii. Bd. 102, p. 143. Bukovsky gives references to the other cases.

§ *Trans. Third Inter. Cong. Derm.*, 1898.

Hindoo boy of four they were so, and contrasted sharply with his dark skin. Harrison of Bristol wrote to me describing a white-papuled case in a white person.

The position of the lesions exercises a modifying influence upon their aspect. Thus, upon the palms and soles, there is only thickening of the epidermis, with perhaps white spots where the horny layer is cracking. On mucous membranes the sodden papules look white. Lichen hypertrophicus is much more frequent on the lower extremities, and lichen verrucosus is seldom seen above the knee.

Dubreuilh * records it as affecting the nails, but there was nothing distinctive.

L. Planus Hypertrophicus. When the disease has existed for a long time,—and it may last an indefinite number of years if untreated,—the papular part clears up, leaving the patches, which undergo great thickening, often caused and always aggravated by scratching. In some cases with severe pruritus the thickening may occur quite early.

The patches when isolated are roundish or elongated, considerably raised above the surface, rough from small horny adherent scales, and of a purplish hue. This is especially marked about the lower third of the leg, its usual position, but it may occur in any part of the lower and sometimes on the upper limb. By coalescence of the primary patches large areas of infiltration are produced. When these lesions, which are largely epidermic, are removed or clear up very deep pigmentation and even atrophic scarring is left.

L. Planus Verrucosus is sometimes only a variety of hypertrophic lichen, in which the papillæ of the skin are enlarged and have an irregular wart-like horny covering. Warty patches may also form primarily, from the aggregation of papules developing round the hair follicles of the lower extremity (rarely on the upper limb). These papules have not the characters of the usual form of L. planus, but are acuminate or conical, with central horny projections, and therefore like a nutmeg-grater to the touch, and may be rounded in outline. If they enlarge peripherally they tend to flatten out, but they usually coalesce

* *Annales de Derm.*, vol. ii. (1901), p. 606.

into a considerably projecting patch, with a very rough irregular horny surface of a dirty greenish or brownish hue.

Similar papules, single or in regular aggregations, but remaining discrete, may sometimes be seen interspersed with ordinary L. planus lesions, and the latter are almost sure to be present in some part of the body when lichen verrucosus is present.

Lichen Planus Sclerosus, seu Atrophicus, seu Morphœicus. Morrant Baker in 1882 had a case of this, but Hallopeau * in 1889 first published and described the condition, and he has had two cases since; Stowers showed a well-marked case to the Dermatological Society of London. Baker's case was composed of white, oval or round, convex, solid papules, in symmetrical groups of irregular shape, on the tips of the elbows and knees, the wrists, and back of the hands and feet. There were minute vessels between the papules. Usually, however, they are flat and angular, firm to the touch, and bend with the skin, the seat of election being the lower part of the forearm. In the center is a horny plug, and if this is removed it leaves a hole with a distinct horny wall. The papules are often of a nacreous white, very like morphea, from which it may be distinguished by the horny plugs and the component papules being visible, especially when they run together, though their outline is seldom wholly lost. There is no clinical sign of inflammation. Hallopeau describes the mode of development. A black, slightly projecting horny point forms; it has a bright red areola, which lasts several months, and is united to similar more recent lesions. The black projections fall out after some months and the eruptive plaque is decolorized. There is moderate itching only. Darier's histological observations in one of Hallopeau's cases show that the difference lies in the active inflammatory process being more deeply situated than usual, and the production of fibrous tissue in the papillary layer. There may be lesions of the buccal mucous membrane of the usual lichen planus description.

On Mucous Membranes.† It is not infrequent, and espe-

*Hallopeau's third case, *Annales de Derm.*, January, 1896, vol. vii. Zarubin's case of L. ruber planus atrophicus was different and had red papules. *Archiv f. Derm.*, vol. lviii. (1901), p. 323, colored plates.

† Author's Atlas, Plate XXXVII., Figs. 3 and 4, palate and tongue, and Plate LXXXVIII. Figs. 4 and 5, tongue and buccal mucous membrane.

cially when upon the penis may precede the skin eruption by some weeks or months. It is often most marked in the mouth when there is but little eruption of the skin, and may be quite absent in the most generalized cases. On the tongue it usually appears as ill-defined opaque white spots, symmetrically placed on each side of the raphe and scarcely raised above the surface; but in one case of mine there were in addition to the white spots smooth, flat, angular, very slightly raised papules of the same color as the rest of the tongue. On the buccal mucous membrane white branching streaks may not infrequently be seen, most marked opposite the teeth. Inside the lips it is in minute specks, and on the palate I have seen it in a mosaic with white outlines. On the penis the appearance varies, being white or of the usual color, according to whether the glans is covered by the prepuce or not; *i. e.*, whether the part is moist or dry, the glans being the usual site of the eruption. In a little girl under my care the eruption had the aspect of white spots inside the vulva; moreover, I have seen it on the outer side of the vulva in the adult.

L. Planus Annularis.—It has been mentioned that the lesions may be in the form of rings; one or two here and there are not uncommon, but in a few cases they are very numerous, and are a striking feature in the case. They are seldom large, a quarter to three-quarters of an inch is the usual size, and the ordinary papules are always present. Cavafy closely observed a well-marked case, in which the rings were strongly developed on the trunk, and affirms that they are formed in two ways, (1) "by the direct confluence of papules into rings, and (2) by gradual peripheral extension of large flat papules, accompanied by involution of their central portions. The former arrangement obtains on the trunk, the latter on the forearm." The rings have a firm, very narrow raised border, sometimes showing traces of their compotent elements. Brooke and Engman * have also observed the second and unusual mode of development; the latter affirmed that the peripheral activity and central involution began at an early stage, and not by the involution of a fully formed plaque. Engman examined a ring histologically.

* Engman, *Amer. Jour. Derm. and Gen.-Ur. Dis.*, vol. xix. (1901), p. 209.

Linear L. Planus. Not only may the individual papules be arranged in lines, but the grouped elements may form striæ, or bands, in the course of nerves, or, as some consider them, in Voigt's lines, *i. e.*, the boundaries of the areas included in a cutaneous nerve domain. Although such cases are rare, there are a good many recorded, owing to their striking character. The most favored position is in the course of the small sciatic nerve from the buttock to the middle of the calf. Branches of eruption from this may pass upwards to the genitals or downwards to the heel and along the foot. Such cases were known to Cazenave and Devergie * as "Lichen en ruban." The latter quotes a case with the sciatic distribution by Faget in 1843. A similar distribution has been noted in other eruptions, and is especially frequent in ichthyosis hystrix striata.

In a lady of fifty, sent to me by my friend Gilbert Smith, a succession of connected rings of eruption extended from the vulva downwards and backwards to the middle of the calf, apparently following the course of the small sciatic nerve. The borders were composed of brownish-red, flat papules, with yellowish staining in the center. There were abundant characteristic L. planus papules on the abdomen. The patient was a highly neurotic subject.

Morris, Pringle, Galloway, Meyer, and Heller of Berlin † have met with cases with a very similar distribution, and in Meyer's case the eruption generalized while under treatment. In another of my cases it began just below the left buttock, and extended downwards and forwards in streaks to the anterior surface of the thigh as far as the beginning of the lower third. The eruption consisted for the most part of characteristic lichen planus papules, but there were also some acuminate papules with horny centers intermingled. In a third case, a girl of twelve, it extended from the center of the fork down the inner side of the thigh to the lower third, and from the inner and lower border of the popliteal space to the back of the internal malleolus, in the course, therefore, of the internal cutaneous and saphenous nerves.

In Mackenzie's case the eruption was in the course of the

* Devergie, "Maladies de la Peau" (1854), p. 449.

† *Archiv f. Derm. u. Syph.*, vol. xlii. (1898), p. 59, with photograph and microscopic plates and references to cases with similar distribution.

left ulnar and internal cutaneous nerves; in another it began in the course of the intercostal nerves like a herpes, and subsequently, after a long interval, became general. Similar cases in other positions are on record, as in L. Fournier and Paris's case, on one side of the neck in the course of the superficial cervical plexus in front, and the third to the eighth cervical behind.

Complications and Sequelæ.—Bullæ are sometimes observed in the course of lichen planus, either on the free skin or where the papular eruption is already developed, but in a case of Besnier's related by Darier, and in Róna's case, an outbreak of bullæ preceded the appearance of the usual typical papules. Kaposi and Leredde have also had striking examples of the bullæ having been associated with the papules from the commencement. As a rule, the bullæ are few in number, from a quarter to half an inch in diameter, with clear or slightly blood-stained contents; but in Kaposi's * case they were extremely numerous, and actually masked the lichen planus condition for a time. Many of the cases have taken arsenic for some time before the bullæ appeared; but while it is possible, as C. Fox suggests, that it may be a predisposing factor, I can, from personal experience, affirm that in some cases no arsenic has been given. †

According to Ciarrocchi, milium may follow lichen planus as it does sometimes pemphigus. Keratosis palmæ and plantæ may be present in a high degree in some acute general cases. In one patient of mine the keratosis was great, there was purplish redness round, and there was profuse hyperidrosis of the hands. The thickened part was thrown off in large masses as he improved. Similar cases are on record. The horny puncta of the papules are sometimes unusually prominent, amounting almost to spininess; they are usually shed in the course of the eruption, but in one of my cases persisted after the surrounding papules had subsided. Soft soap frictions soon removed them.

Very distinct sepia pigmentation is the rule, but in some cases it is more intense, a bluish-black color being left which is very slowly absorbed.

* Hand Atlas, Plate 171.

† In *Brit. Jour. Derm.*, May, 1902, with many references, Whitfield found that no arsenic had been given in nine out of seventeen cases. In a bulla examined, the whole epidermis was raised up.

So, too, atrophic shallow pits are commonly observed after the eruption has subsided, but it usually only affects the epidermis and upper part of the papillary layer, and the loss of tissue is soon restored. Occasionally, however, the process goes deeper and permanent scarring results. This is not very rare after the hypertrophic form on the legs, and the scar is then pigmented, but it may also occur even where there have only been papules. Kaposi and Brault * have recorded cases in which, during a recurrence, the scars of a previous attack were observed as distinct white pits. I have only seen it after patches, not from papules alone.

Children.—When occurring in children—a rare event—the disease takes the same characters and follows the same course as the acute and chronic form of adults.

There is, however, a spurious infantile form which is different in development and course. After closely observing this for some years at the East London Hospital for Children, I am convinced that it is only the subsiding stage of a miliaria rubra, either papular or vesicular, in which the top dies down and a scale comes off, leaving a smooth, shining, angular, flat, very slightly raised papule, of a brighter red than usual, though it may get a purplish tint subsequently. It may be on the limbs or trunk, or both, is attended with considerable itching, and gets well in a few weeks with the help of a soothing application, such as calamin lotion and a ferruginous tonic.

It occurs most frequently in infants who sweat profusely, and is, therefore, common in rickets, and probably a sudden chill while in a profuse perspiration is the determining factor.

Liveing and Colcott Fox † have written on this form. It is, however, only noteworthy in diagnosis, and is not a disease of itself. Nevertheless, true lichen planus does occur as a rare event in infants. Kaposi had a case in which the child was only eight months, and Hallopeau ‡ one of twelve months.

Etiology.—The most common cause is nervous exhaustion, for which "neurasthenia" or "nervosisme" are the euphemisms.

* Kaposi's case is related in his Lectures, and Brault's is recorded as a case of lichen planus sclerosus in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 834.

† "Notes on Lichen Planus in Infants," *Brit. Jour. Derm.*, July, 1891

‡ *Annales de Derm.*, vol. i. (1900), p. 225.

It is consequent upon worry, anxiety, or overwork, deficient food, etc., especially in a nervous temperament, but derangements of the digestive or generative system are not infrequent, while in many cases no cause whatever can be made out, the patients being young and vigorous subjects, free from neurosis in any form. The acute general cases are, I believe, often determined by a chill during perspiration, especially in persons who have already had chronic patches.

Age.—It occurs mainly between thirty and sixty, and it is more frequent between forty and fifty than in the other decades above and below that one, in which the numbers are about

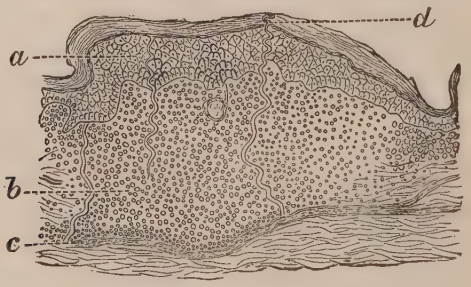


Fig. 24.—A recent papule of lichen planus. × 120.

b, copious round cell infiltration lifting up epidermis into a papule; *c*, blood-vessel; *a* and *d*, several ducts traversing papule.

equal. The extremes I have seen are three and seventy-four years, but younger ones are recorded (see under Children).

Sex.—In England it is more frequent in women. In 114 hospital cases the women were as 7 to 4, and in 108 private cases as 8 1-2 to 7, and other English cases tend in the same direction. In Vienna just the reverse holds good; Kaposi says two-thirds are males. Possibly the much greater frequency of the L. acuminatus there may account for the discrepancy, as that seems undoubtedly more common in males.

Traumatism in the shape of scratches and friction will determine the development of L. planus in the locality and direction of the damage in a person in whom the disease already exists, and in a case of S. West's a scratch of a cat excited an eruption in the scratch lines in a woman who had no previous eruption, and subsequently other lesions formed where there

had been no scratching. Jacquet goes further than this, and says that all lichen planus is traumatic in this sense in a skin in which the vaso-motor tonus is diminished under a central nerv-

Slight cell infiltration into upper part of hair follicle
Thickened cuticle containing granules
Thickened rete
Cell effusion beneath thickened rete mucosum
Sweat duct
Vessel from which effusion has occurred

Fig. 25.—A papule of lichen planus, rather older than the one depicted in Fig. 24, or formed by a less acute process. The hair follicle by the side of the papule is quite healthy the papule being formed round a sweat duct.

ous influence, and that a dermographic lichen planus can be produced just as a dermographic urticaria. This is in my opinion an over-statement of the case, but most cases of the so-called Vidal's lichen are thus produced.

Pathology.—In L. planus the process appears to be inflam-

matory, beginning usually round a sweat duct in the upper part of the corium, with subsequent thickening of the rete, the cells of which are horizontally compressed by the cell mass below; the papillary vessels are dilated. In the infiltrations these secondary changes form the most conspicuous part of the process.

The pathological factor which gives rise to the inflammation still requires elucidation. Colcott Fox suggests that it is only the consequence of neuroparalytic hyperemia, and most French authors agree with him (*vide* Jacquet's theory under Etiology). But while the clinical facts lend some color to the nerve theory, it does not really explain the process, and as disturbance of the nervous system cannot of itself determine the form of an eruption, other factors must be necessary, and of these we are ignorant. The fact of its having an occasional nerve distribution is no ground for supposing a disease to be of nerve origin.

Anatomy.—In 1881 I excised recent papules from five living patients, and the border of an infiltrated patch from one, and found the anatomy to be as follows:

A vertical section through a recent papule of L. planus reveals a mass of cells like leukocytes, and embedded in this are sometimes seen fragments of the fibers of the corium, in the most superficial part of which the effusion has taken place. Sharply limiting the cell mass below lies a blood-vessel, and it may be assumed that it is through its upper wall that the cells have passed. There are usually no cells below the vessel.

The condition of the rete varies. When the effusion of leukocytes is considerable—*i. e.*, when the process is acute—the rete is forced upwards, and is very little thickened, or indeed may even be thinned in the center, slight thickening being evident at the sides only and in the immediate neighborhood of the papule (Fig. 24). When, on the other hand, the inflammation is not so acute, the rete is immensely thickened by proliferation of its cells. The thickening compresses the cell effusion below it, obliterates some of the papillæ, while others are enlarged by the downgrowth of the interpapillary processes (Fig. 25). Thus, in the first case, the cell effusion forms the greater part of the papule, while in the second the proliferated rete has the larger share.

The horny layer is only slightly thickened except in the center of the papule in the second phase, where it forms a sort of conical plug fitting into a depression of the rete, its apex corresponding with the orifice of the sweat duct. The desquamation of this plug affords a ready explanation of the familiar clinical feature of a central depression in the papule. It appears to me much more probable than Biesiadecki's theory that the depression is produced by the tetanic contraction of the arrector pili muscle pulling the surface down. The falling out of a hair does not

account for it, as the hair follicles are seldom the seat of the process. As seen in the figure, a sweat duct may so frequently be traced down the center of the papules that I cannot but think they act, at least, as determinants for the starting-point of the process, the deep-lying sweat glands being unaffected. It is common also to find a healthy hair follicle adjacent to the papule. The vessels are only slightly dilated in this stage. In a papule with a hair in the center, a comparatively rare circumstance, I found thickening of the rete adjoining the hair follicle, slight effusion at the angle of the follicle and rete, and perhaps slight thickening of the upper part of the former ; the lower part was entirely unaffected. I have only once seen a cell effusion round the transverse section of a hair follicle deep in the corium. In sections from the border of a patch there was enormous thickening of the rete, the cell effusion adjoining had undergone partial fibrillation, and the vessels were enormously dilated. There were no hair follicles in the piece examined, and it was not sufficiently deep to show the lower part of the corium. Robinson of New York, Caspary, and Török * have since confirmed the above statements as far as the anatomical facts are concerned, but Török explains them somewhat differently. The older descriptions by Neumann, Biesiadecki, etc., were made from chronic cases of L. ruber, and are therefore totally different.

More recent observers, Joseph, Unna and his followers, Norman Walker, Galloway, Macleod, etc., regard the cell infiltration to be chiefly derived from connective tissue cell proliferation, and the process more allied to a granulomatous than an inflammatory process. Galloway compares it with lupus erythematosus. It would be difficult to account for acute cases on the infective granuloma theory.

Among minor points Joseph noted the breaking-down of the stratum cylindricum of the rete and the formation of small cavities ; an observation also made by Whitfield. Unna noticed cystic dilatation of sweat coils. Joseph attributes the umbilication of involuting lesions to the absorption of these pseudo-vesicles ; Török explains it as seen in well-developed papules by its being held down by the sweat duct, which seems to me very improbable. Unna considers the shining aspect of the papules is due to the stretching of the epidermis by the subepidermic infiltration, and Darier says Wickham's striæ result from the stratum granulosum being unequally thick, the thin parts allowing the vessels to show through.

In **L. verrucosus** Joseph † describes enormous thickening of the stratum corneum and granulosum ; "vesiculation" in the prickle-cell

* "Anatomie du Lichen plan.," by L. Török, *Jour. des Mal. Cut.*, 1889, with references to literature. Also in German, illustrated in Ziegler's *Beiträge z. path. Anat.*, Band. viii. Caspary gives a figure closely resembling my second figure.

† "Anatomy of Lichen Ruber Planus, Acuminatus, and Verrucosus," *Archiv f. Derm. u. Syph.*, Bd. 38, January 7, 1897. Illustrated. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 245. Unna's *Histology*, 1896, gives references to date.

layer and hypertrophy of the papillæ, cystic degeneration of the sweat-coils, and mononuclear cell infiltration of the hair follicles.

Diagnosis.—In L. planus, the discrete, flat, angular, shining papules are, when these characters are combined, so distinctive, especially when they have a purplish tint and are situated on the wrists or over the vastus internus, that there is no disease with which they could fairly be confounded.

More minute and less constant characters, requiring examination with a lens, are a central horny point or a depression, and Wickham's sign of minute gray points and striæ.

Mistakes arise from taking one or two of the above signs as sufficient for the diagnosis. Thus flat *round* papules may be met with in lichen acuminatus, and as one of the phases of mycosis fungoides * in the premycosic stage of some cases.

Some of the patches in the hypertrophic form, when raised and scaly, might be mistaken for *chronic eczema* or *psoriasis*. The violaceous or lilac tint almost invariably present in such cases should suggest the possibility of L. planus, and with close investigation *it is very rare not to find some of the characteristic papules or their stains in the neighborhood of the patch*, or at all events in some other part of the body.

Other points in the diagnosis from *chronic eczema* are: The disease began as flat papules, there has never been discharge nor crusts, and the position would probably be different.

From *psoriasis* it began as smooth, not scaly, papules, which did not enlarge at their periphery. The scales on the patch are thin and not heaped up: on their removal their color is purplish or dull red, instead of bright red. Unless situated on the extensor aspect, the position might help here also.

Prognosis.—This is generally good for ultimate recovery, but the patients often improve but slowly.

Treatment.—The treatment in the main is on the same lines as that of psoriasis, except that, as a rule, the local applications require to be rather milder. There are three indications to be followed: first, the improvement of the general health, especially as regards the nervous exhaustion; secondly, the relief of

* This was so in a case published by M. Morris in *Brit. Med. Jour.*, vol. vi. (1894) p. 287, with colored plate, and in one of my cases of the lymphangitic form.

the itching, which of itself will promote the involution of the eruption; and thirdly, the employment of arsenic and other drugs which experience has proved to be useful; but what may be good for chronic is often unsuitable for acute cases. In fulfillment of the first indication rest for the overwrought nervous system is frequently essential, and in widespread and acute cases bed is by far the best place for the patient; in some cases change of air and surroundings and improvement of the general nutrition and tone are the line to be followed; feeding the patient up with easily assimilated food frequently administered, cod-liver oil, nervine tonics, as iron, in full doses, quinine, the mineral acids, and nux vomica, may do the rest. If, however, the digestion is disordered, that must first be corrected by the removal of constipation, dieting, alkalies, bismuth, bitter tonics, etc.

Arsenic used to be considered to be specific for this disease, but it often fails, and has in my practice been largely superseded by other medicines. It is often unsuitable for various reasons.

For example, in cases where an irritable condition of the alimentary canal exists, this must be subdued before it is safe to give the drug. Some patients are intolerant of arsenic, and there are some cases where it seems even to aggravate the eruption. Tilbury Fox seldom gave arsenic, and in many localized cases and in the verrucose patches its influence is very slight. For the less severe cases it may be said that arsenic is likely to be most useful in proportion to the chronicity or low intensity of the inflammation, where there is no defect of the general health that can be better removed by other means. Liveing strongly recommends bichlorid of mercury 1-16th of a grain three times a day, which is often of great value, but some prefer the biniodid; their action is probably identical. Tilbury Fox advocated diuretics, followed by the mineral acids and nux vomica. I have used this plan a good deal, but latterly have found the salicin treatment gr. xv to gr. xx ter die of great value in a large proportion of subacute cases, and have succeeded without local treatment in producing involution in many instances. Where the patches are few, indolent, and chronic, and in most hypertrophic and verrucose cases, internal treatment is of little avail, but an extensive hypertrophic eruption

on the leg in one of my cases entirely disappeared after a course of Marienbad taken for gouty conditions.

In acute, widely spread cases, large doses of quinine in an effervescing mixture, as in pityriasis rubra, have succeeded well in my hands. Salicin has succeeded in these cases also. When the itching is a strong feature, either in acute or chronic cases, antipyrin gr. v twice or thrice a day is often most valuable, both in relieving the itching and in calming the patient, who too often has but little resisting power left in his shattered nervous system. Freeman had success with ammonol in 3 to 5 grain doses.

External treatment will materially influence the duration of the eruption. Some form of tar is generally useful, but it is recommended with reservations. It is very likely to disagree where there is intense hyperemia, as such cases will not tolerate skin stimulants; here calamin lotion or liniment or inunction of oil or vaselin, with a little liquor plumbi subacetatis, or other soothing applications, like those referred to in the treatment of acute eczema, give most relief. The inunction of olive oil, with acid. carbolic. gr. 10, or thymol gr. 10, or ol. rusci ♏x to ʒj, is often very serviceable in relieving the itching. In nearly all other cases some form of tar is very beneficial. As a rule, I prefer liquor carbonis detergentis ♏x up to ʒj, to one ounce of water or calamin lotion, dabbed on several times a day; thymol or naphthol gr. 10 to ʒij to ʒj of lard or vaselin, or as a lotion, have been found very useful. Where strong remedies can be borne, nothing, in my opinion, acts so quickly as the soap and spirit liniment with ʒss to ʒiv of oil of cade to the ounce. As a rule, the best plan is to begin with a weak application and gradually to increase the strength. Other remedies recommended are salicylic acid or bichlorid of mercury lotion. Unna's formula of gr. 20 of carbolic acid and gr. 2 to 5 of hyd. bichlor. to the ʒj of zinc ointment has often been serviceable in my hands; ol. rusci ♏xx, ung. hydrarg. ammon. ʒj, is another useful formula. Alkaline and bran baths are likely to do good in almost all cases, and tar or sulphur baths sometimes. Jacquet strongly recommends hydrotherapy in the form of gentle tepid douches for several minutes, to be followed by momentary cold ones. The verrucose patches are very rebellious to treatment. Unna's salicylic plaster, applied until the hard-

ened epidermis can be removed, is a useful preliminary. Then the pure oil of cade should be brushed in, and a solution of bicarbonate of soda, 5ij to the pint, applied on lint under oiled silk. Or the Beiersdorf paraplast of mercury 50 per cent., carbolic acid 7.5, may be applied after the salicylic acid plaster has done its work. It has been recommended to lightly stroke the patch with Paquelin's cautery, and then apply boric or other mild antiseptic ointment; but this is rarely necessary, and few patients would consent to it, as the patches give very little inconvenience except itching. Time alone removes the pigmentation left after the removal of the papules or patches.

LICHEN VARIEGATUS.*

Synonyms.—Parakeratosis variegata (Unna), Dermatitis variegata (Boeck), Psoriasiform and Lichenoid Exanthem (Neisser, Jadassohn, Juliusberg, and F. Pinkus), Erythrodermie pityriasique en plaques (Brocq), Pityriasis Lichenoides Chronica (Juliusberg), Dermatitis psoriasiformis nodularis.

Unna and his pupils, Santi and Pollitzer, were the first in 1890 to differentiate this rare form of disease, although cases had been previously recorded as a variety of lichen planus, etc. Since then cases have been published by Neisser, Jadassohn, Juliusberg (three cases), Pinkus, Róna, etc., but Unna's name

* *Literature.*—Tilbury Fox's Atlas, Plate XIII., called Lichen Ruber, from a St. Louis model of a case of Lailler's; a copy of it is in the College of Surgeons Museum, No. 88, Derm. series, labeled by Erasmus Wilson Lichen Planus—var. Retiformis. Parakeratosis variegata: Unna, Santi, and Pollitzer, *Monatsh. f. prak. Derm.*, vol. x., Nos. 9 and 10. 1890, with a general review of the class they called parakeratosis, give the history of two cases. Psoriasiform and Lichenoid Exanthem: Jadassohn in Verhandl. IV., *Deutschen dermat. Congr.*, Juliusberg, *Archiv f. Derm. u. Syph.*, vol. xli. (1897), p. 256, and under the title, Pityriasis Lichenoides Chronica, *loc. cit.*, vol. l., Heft 3, 1899. F. Pinkus in Pick's *Festschrift*, 1898; Brocq, "Erythrodermies Pityriasiques en plaques disseminées," *Revue Générale de Clin. et de Therap.*, 1897. Fox and Macleod on a case of Parakeratosis Variegata, *Brit. Jour. Derm.*, vol. xiii. (1901), p. 319, with histology and abs., with critical review of nearly all the cases to date. Abraham has shown a case since their paper, a woman, æt. twenty-two.

has not met with acceptance, so I venture to propose it as a form of lichen,* the clinical resemblance to lichen planus having been recognized by most observers. Jamieson in 1898 showed three cases in Edinburgh, and Eddowes one in London in 1899; Colcott Fox showed a case, and I have shown two cases to the Dermatological Society of London. The eruption is general in distribution, sometimes including the face, of slow evolution and very chronic course, lasting for years (thirty years in a case of Jamieson's). Subjective symptoms are as a rule almost absent, though in Brocq's case itching preceded the eruption and subsided when it was out, and in mine it itched at night, and if he began to scratch he could not leave off. The most striking feature is the arrangement in bands or semi-confluent patches, oval or round, inclosing areas of healthy skin, so that a reticular appearance is produced. The patches are covered with thin, delicate scales, which, on removal, leave the skin shiny or waxy-looking, and of a yellowish or bluish tint, the color being deeper on the lower extremities. The eruption as a whole has a pale lilac hue. There is a slight atrophy left for a time, where papules have involuted.

The patches are generally well defined, and while the smaller resemble lichen planus, the larger are erythematous, rough or rather scaly, and decidedly infiltrated. There are also disseminated very flat pin's-head to lentil-sized papules with usually a small scale in the center, and there is sometimes bleeding on removal. This is the early or lichen stage; the scaly or psoriasiform stage is a later development.

Variations.—All the cases previously referred to, described under various names, have a general resemblance clinically, and a still closer one microscopically. In all subjective symptoms were almost absent, and all were unaffected by local applications, and had a similar regional distribution. They presented some minor differences. In Brocq's erythrodermie pityriasique there were disseminated plaques instead of reticulation.

* Fox and Macleod object to the generic title "Lichen," because the primary lesion cannot always be proved to be a papule; but it is only meant as a convenient clinical term, and designates a conspicuous feature of all well-marked cases which has struck every describer, and it avoids the erroneous term parakeratosis. Jamieson strongly upholds that the disease is a lichen.

J. C. White referred his cases to Brocq's type, but his second case was like one of mine. In Jadassohn's psoriasiform and lichenoid exanthem the papules were not reticular, but were grouped, oval or round, had fine scales, and bled easily when these were scratched off.

In the seven cases collected by Juliusberg the primary lesion was a smooth, red, flat, pin's-head-sized papule like that of lichen planus, which subsequently acquired a thin, shining white scale.

They are all evidently only variants of one affection, the arrangement of the exanthem being the most variable feature.

Etiology.—Neither age nor condition seems to have any bearing on the disease, but it is much more common in men than women. One case (Juliusberg) began at seven years, the others have begun in adult life. Pinkus' case and my own were worse in winter, but the others have been unaffected by season. Being subjected to great and sudden variations of temperature seemed to have an etiological bearing in some cases.

Pathology.—This is unknown. Fox and Macleod's suggestion, that it is due to a vaso-motor disturbance associated with edema and infiltration of cells in the corium, with secondary changes in the epidermis, appears to fit the facts.

Anatomically there are slight inflammatory changes with cell infiltration in the papillary layer and slight increase in the prickle cell and horny layers. Unna regards these changes in the epidermis as primary, hence his term parakeratosis, but this cannot be proved. Juliusberg admits the similarity of histology of his cases to Unna's, but thinks they are different diseases. Macleod showed sections to the Dermatological Society of London, in which there was no parakeratosis to signify, and in some parts, actual thinning of the epidermis. The granular layer was either diminished, absent, or well-defined. The general result was that of a superficial inflammation of the corium, with secondary changes in the epidermis.

Diagnosis.—The slow evolution, persistent generalization, absence of itching, reticular or patchy arrangement, papulo-scaly and scaly patch aspect, persistence, and rebelliousness to treatment, are the most distinctive features. The absence of scaly crusts, only delicate scales, the general arrangement and whole picture, are different from psoriasis. It is most like lichen planus, but the scaly character, even in the papular stage, the reticular arrangement, the rebelliousness to treatment,

together with the frequent involvement of the face and the absence of itching, are differentiating characters. The attempt of some authors to distinguish between the parakeratosis variegata of Unna and psoriasiform and lichenoid exanthem of Neisser, etc., is, in my opinion, futile, the more scaly cases being of longer duration than the others. It is also like the lichenoid premycosis erythrodermia. One of Jamieson's cases claimed by Unna as parakeratosis variegata turned out to be mycosis fungoides.

Treatment.—All concur in its being most rebellious to treatment both internal and external. Unna claims most success with frictions with pyrogallic acid so strong as to be dangerous but for the administration of large doses of hydrochloric acid, which neutralizes its poisonous effect. Chrysarobin externally and arsenic internally have failed to touch the disease.*

LICHEN SCROFULOSUS.†

Synonym.—Lichen scrofulosorum.

Definition.—Lichen scrofulosus is characterized by very small chronic inflammatory papules, of a red color, fading to that of the normal skin, disposed in groups and circles, and occurring mainly in scrofulous subjects.

Mild degrees of this eruption are not uncommon among the children of the poor, but are usually only discovered accidentally, but although commoner than supposed, well-marked cases are rare. Neumann reckons it at 3 per 1000 cases of skin diseases in adults, and 5 per 1000 in children, and my own experience at the East London Hospital for Children gave the same pro-

*Compare Plate XXVI. of Author's Atlas, representing a remarkable case named psoriasis follicularis; although psoriasiform, lichenoid, and reticular, both the eruption and the general history were different from lichen variegatus.

†Illustrated in Author's Atlas, Plate XXXIV., Fig. 1, on the leg of a child. Hebra's Atlas, Lief. 9, iii., Plate III., trunk and arms. The small follicular syphilid in the syphilid plate of this work would equally well represent this eruption, except that it is of slightly browner hue. Twenty-one cases, including fifteen of my own and six of Dr. Tilbury Fox, were published in vol. xii. of the *Clin. Soc. Transactions*, in which there is a very good plate of the disease.

portion, while at U. C. H., with cases at all ages, only half that proportion are met with.

Symptoms.—The papules in this disease are from a pin's point to a pin's head in size, slightly conical, of a bright red at the very first, fading later into a pale red or fawn color, or even the color of the normal skin, and tending to be arranged in roundish groups, circles, or segments of circles, *i. e.*, the normal arrangement of the hair follicles; other papules may, however, appear in the intervals of the groups in some parts, filling them up, and so producing large surfaces covered with the eruption, and looking very like an exaggerated cutis anserina. A minute scale is formed upon each of the older papules, which, after remaining for a variable period of weeks or months, undergo retrogression, desquamate, and leave behind them small yellowish pigmented spots.

The eruption is usually limited to the trunk, itching is absent or very slight, and some evidence of tuberculosis is nearly always present.

With regard to position, it is usually more abundant at the sides of the trunk and over the lower ribs and flanks, than upon the front and back; the neck is often affected, the limbs rarely beyond the groins and axillæ, but when they are, the arms are more frequently involved than the legs. In one of Neumann's cases, æt. four and a half years, the whole surface was affected, except the legs. The papules may be grouped round lesions of scrofuloderma or lupus.

Course.—Fresh papules frequently form elsewhere, and thus by successive crops keep up the disease for years, or the disease disappears for a time and then recurs. It leaves no scars in its train.

Variations and Complications.—In addition to the above-described papules others of a larger size may be seen here and there with a yellow sebaceous plug in the center, which may go on to form acne pimples or pustules. These pustules may also arise even where there are no other papules, as on the limbs or face. An extreme development without any lichen scrofulosorum is described under Acne.

In some cases many of the papules have a horny spine projecting from their center, the condition called lichen spinulosus being present as a complication.

Hallopeau has observed papules like those of lichen acuminatus on the back of the first phalanges of the fingers. In severe cases fine branny, glistening scales are formed between the papules, giving the skin a very cachectic appearance. These lesions are really only a special feature of the disease, but other concomitant skin affections may occur, such as seborrhea of the scalp (Neumann), purpuric extravasations into the hair follicles, especially on the dorsum of the feet, which is the so-called "**lichen lividus,**" and, more common than this, a pustular eruption about the genitals of an eczematous nature, beginning as inflammatory nodules.

Undue prominence of the hair follicles was noticed by Dr. Tilbury Fox to be generally present.

According to German authorities 90 per cent. have some evidence of scrofula in the shape of enlarged lymphatic glands, especially the cervical, submaxillary, axillary, and tonsils; caries or other bone-lesions and ulceration of the skin are also common. Lupus vulgaris was present in six out of forty-three cases of Lukasiewicz. Phthisis is unusual, but may be present, and frequently figures in the family history, and several of my cases had pleuritic effusion; on the other hand, I have met with one case where the child was well nourished and apparently in perfect health, with a good family history; nevertheless, cod-liver oil cured her.

Children.—The limbs are more frequently affected in children than in adults, and the eruption may occur there without involving the trunk, a peculiarity hardly ever seen in adults,* and, as far as my experience goes, the younger the child the less the liability to acne pustules. Phthisis also is a more common accompaniment in children than in adults.

Etiology.—The scrofulous predisposition seems to be the main, if not the sole cause; though, according to Lukasiewicz, insufficient food or any drain on the system may lead to it.

Age.—The disease is commonest in childhood; Neumann's, Kaposi's, and the English cases agree in this; yet Hebra's original description was taken from over fifty consecutive cases which were all between fifteen and twenty-five years, probably from there being only a small proportion of children in his clinic;

* In a woman of twenty-one under Lukasiewicz, the lower extremities alone were the site of a thick eruption.

but the vast majority of cases occur between two and twenty years.

The youngest case I know of was one of my own, æt. eleven months; the oldest a case of Lukasiewicz, æt. fifty-six years.

Sex.—It is much more common in males, at least in Germany, for all Hebra's cases and thirty-five out of forty-three of Lukasiewicz's cases were males. On the other hand, a majority of the English cases were females.

Anatomy.—Kaposi's investigations in 1868 showed "that the lichen papule is formed by a cell infiltration of the papillæ around the follicle, and the central scale, by a collection of epidermis at its dilated orifice." These exudation cells are first seen round the vessels and in the meshes of the areolar tissue at the fundus of the follicle and sebaceous glands, and later, within those structures, afterwards accumulating to such an extent in their interior that the sebaceous gland-cells are thrust toward the aperture, and the root-sheath separated by the follicular wall, which becomes quite distended by the accumulated cell-mass. More recent observations do not invalidate the above.

Darier found also perifollicular changes, which appeared to him to be of a tubercular character; giant cells surrounded by numerous nuclei were conspicuous. Jacobi and Wolff found bacilli, and from another case Jacobi made intra-abdominal inoculations with papules into a guinea-pig, and found caseation of mesenteric glands near the points of inoculation. On the other hand, Jadassohn and Lukasiewicz failed in similar experiments, as did also Lafitte from a case of Hallopeau's, and Lefebre had a negative result, but Pellizarri succeeded; and in 1899 Haushalter* inoculated four guinea-pigs with scrapings of L. scrofulosus with positive results; but his diagnosis is not indisputable, as the eruption was scattered, left scars, and involved the face. Wolff also has found bacilli. Lukasiewicz† examined twelve cases histologically, and although he found giant cells there were neither tubercle bacilli nor caseation nor coagulation necrosis, and he considered, therefore, that there was no ground for regarding it as a tuberculous morbid process. He says there is an infiltration of large fusiform cells, beginning round the sebaceous glands and extending to the hair and sweat follicles.‡ and regards the whole process as due to malnutrition, of which tuberculosis is only one cause. He thinks Sack's observations were made on the miliary syphilid, which so closely resembles L. scrofulosus.

The clinical behavior of the disease is so unlike any indisputable tuberculosis of the skin due to the direct presence of tubercle bacilli that

* Haushalter, *Annales de Derm.*, etc., vol. ix. (1898), p. 455.

† *Archiv für Derm. u. Syph.*, vol. xxvi. (1894), p. 33. Full abs. *Brit. Jour. Derm.*, vol. vi. (1894), p. 314.

‡ In a case of Hallopeau's also the sweat glands were involved.

further demonstration of their presence will be needed, before it can be accepted as a direct tuberculosis.

Hallopeau's theory that it is due to a tuberculin toxin would be much weakened by Jadassohn's observations of a case in which the eruption disappeared under the influence of tuberculin injections; but, on the other hand, Schweninger and Buzzi state that they have seen it develop after tuberculin injections. A possible explanation of the discrepancy of the experiments is suggested by Gilchrist's * observation that there were typical tubercles in the deep part of the skin below the hair follicle from a negro child, while the anatomical process producing the papules themselves was quite superficial. Thus, while the papules themselves may not be directly tubercular, they may have been produced by the more deeply seated tubercle itself.

Diagnosis.—The small size and pale red color of the papules, their arrangement in groups and circles, their limitation to the trunk, and the youth of the patient, together with the absence of itching † are the most distinguishing features. The diseases most resembling it are papular eczema, follicular syphilids, L. pilaris, and occasionally psoriasis punctata. It has no relation whatever to L. circinatus.

Papular eczema is not so likely to be limited to the trunk, the papules are a brighter red, some of them are very likely to go on to vesiculation at their summits, and itching is almost always a prominent symptom, and there is not the same grouping in clumps and circles.

The large and more common of the *follicular syphilids* has, in comparison with L. scrofulosus, much larger papules, of a deeper, duller red, the limbs are more often affected, and there is sure to be confirmatory evidence of syphilis, as it occurs rather early in the secondary period. The small follicular syphilid is rare, and, as far as the papules and groups are concerned, identical in appearance with L. scrofulosus,‡ but the limbs and even scalp may be affected, and though I have seen it in a girl of eleven years, generally the age of the patient will suggest further investigation, when other evidence of syphilis will be almost surely forthcoming.

* Reprint from Johns Hopkins *Bulletin*, No. 98, May, 1899.

† Though usual, it is not invariable, and I have known it very marked in the early stage.

‡ In two well-marked cases, both women over forty, the resemblance was so exact that it was only these points that gave me a clew to their real nature and led to the discovery of conclusive evidence of syphilis.

Where the scaliness (so often present in a moderate degree) is unusually abundant, and masks to some extent the typical character of the eruption, L. scrofulosus may be mistaken for *psoriasis punctata*. Its limitation to the trunk, the absence of itching, together with the fact that each papule does not enlarge, and that, as confusion will only occur in severe cases, there are sure to be sebaceous plugs in some of the papules, if not actual acne pustules, will distinguish the lichen, while other evidence of scrofula is sure to be strong in such cases.

The true inflammatory *lichen pilaris* is distinguished by the groups being few in number in most cases. The papules are larger and generally limited to the limbs, and contain spiny plugs of epidermis. When this condition complicates lichen scrofulosus, the spines spring from the papules of L. scrofulosus, which are smaller than those of L pilaris; moreover, there are sure to be groups in which there are no spines, and the whole picture would be that of L. scrofulosus, not of L. pilaris.

Prognosis.—The disease is always curable; and even untreated cases, though perhaps lasting intermittently or persistently for years, do not produce much inconvenience.

Treatment.—This is simple and effectual. Cod-liver oil, internally and externally, always removes the eruption. It should be given in moderate doses at first, increased up to as much as the patient can assimilate; *i. e.*, rarely more than half an ounce a day for a child of five, and an ounce and a half a day for an adult. Externally it must be not only rubbed in, but the skin kept constantly soaked with it. This is Hebra's treatment, and answers well, but is, necessarily, extremely disagreeable for all parties concerned. I have, therefore, tried other emollients, and have found that the inunction of vaselin, either plain, or better with liq. plumb. subacetatis ♏xv, thymoli gr. 5, or ol. cadini ♏v, to the ounce, is quite as effectual and much more pleasant, while smaller doses of oil are usually sufficient, and less likely to upset the patient.

Chrysarobin gr. v to ʒj has been recommended as very efficacious, but its staining quality and tendency to produce erythema restrict its use to obstinate cases of limited extent.

LICHEN PILARIS SEU SPINULOSUS.*

Synonym.—Lichen spinulosus (Devergie).

Definition.—An inflammatory disease of the hair follicles, in which a spiny epidermic peg occupies the center of the papule.

The term L. pilaris was formerly used for the affection described elsewhere as keratosis pilaris; it is here employed, in conformity with the other lichens, for an inflammatory eruption. It is rather a rare disease. Numerous cases, mostly in children, have come under my observation.

It may develop acutely or subacutely in crops, and consists of papules about the size of a pin's head, red, conical, and containing in their center a horny spine, seen, when viewed obliquely, to project about one-sixteenth of an inch, and when the hand is passed over the affected region, it imparts to it the sensation of a nutmeg-grater; this epidermic plug can be picked out, leaving a depression in the papule. When the papule has been present some time the redness subsides, and the papule is the color of the normal skin. There is little or no itching, and the eruption gives but trifling inconvenience, except from the discomfort produced by the horny spines catching in the clothing.

The papules are densely crowded into patches, often very large and irregular in outline, symmetrically distributed, sometimes in a few, sometimes in many regions of the body. The positions most common are the back of the neck, the buttocks, the trochanteric regions, the abdomen, the back of the thighs, the popliteal spaces, and the extensor aspect of the arms. There are few parts of the body exempt, but I have never seen it on the face, upper part of the chest, the hands, or the feet. I have seen it *en nappe* from the hair line to the loins, but in these extensive cases the horny spines vary much in development, the longest being generally on the neck.

Where the eruption is not so dense there is a tendency to form roundish groups, and there are always some disseminate papules, besides those in the main patches. The eruption comes

* Illustrated in Author's Atlas, Plate XXXIV., Figs. 2 and 3, an unusually extensive case on the trunk and thighs of a youth, æt. sixteen, somewhat older than the majority of cases. It is a disease difficult to depict in a drawing.

out in crops, a patch appearing perhaps in the night, and continuing to increase for a week by the development of fresh papules. After this, except that the papules grow paler, there may be no change for an indefinite time. As a rule, this eruption is the only one present, but I have seen it associated with L. scrofulosus, the small follicular syphilid, and also with L. planus.

In these cases the original disease retains its characters with the addition of horny spines in the center of the papules, so that it is not quite correct to say that lichen pilaris is mixed with these other diseases.

Etiology.—The cases are too few in number, and the literature is too scanty, to afford much material for ascertaining its causation. In my experience it has occurred chiefly in children, and more often in boys than girls. The most extensively affected case was a boy of fifteen, whose father suffered from psoriasis; I have also seen it in a woman over thirty. Several of the patients have been pale and delicate-looking, but there has been no very definite ill-health.

Pathology.—There is evidently first congestion of the vessels, followed by slight effusion round the follicle, and hyperplasia of the epidermic cells lining it. The occurrence of spines as a complication or sequel of other papular eruptions shows that more than one kind of inflammation may give rise to the affection. I am not aware of any histological investigation of this form of folliculitis. Unna's observations refer to keratosis pilaris, or suprafollicularis, as he calls it.

Diagnosis.—This presents no difficulty. *Keratosis pilaris* is the most like it, especially when the redness of the lichen has subsided; but though keratosis has an epidermic plug, it is not spiny like that of L. pilaris, develops very slowly, and there is no inflammatory redness at any period; it is also a diffuse, not a patchy eruption, and when the epidermic plug is picked out, the whole lesion is removed.

Lichen acuminatus also has some points of resemblance, but it is a diffuse general eruption; attacks the hands, which escape in L. pilaris, and the epidermic plug is scaly, not spiny. The primary papules of lichen verrucosus which may accompany lichen planus have been confused with this affection, as the papules are acuminate or conical with central horny projections,

but they have not the spiny character of L. pilaris; the papules tend to coalesce into warty masses with a dirty green horny surface, and ordinary lichen planus papules are nearly always to be found in some part of the body.

Prognosis.—It is always amenable to treatment, but will, if left to itself, last for an indefinite time.

Treatment.—Alkaline baths and friction with the hand while in the bath are useful preliminary measures, and then a liniment of

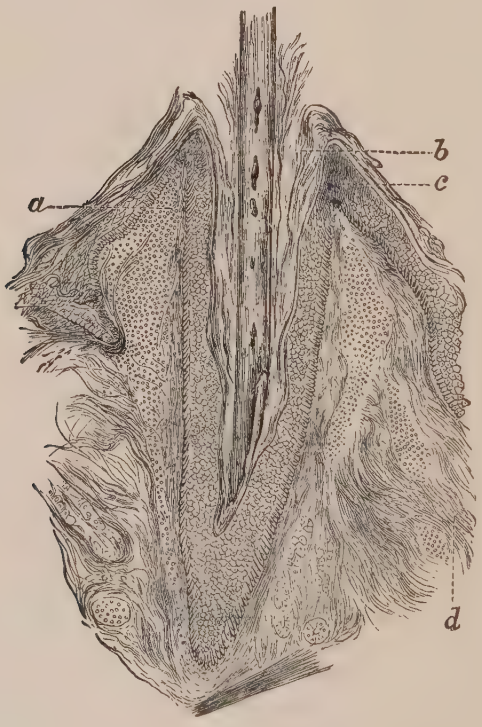


Fig. 26.—Lichen pilaris (special variety).

b, orifice of the hair follicle filled up with horny cells ; *c*, cells of the rete, elongated by the pressure upwards of the inflammatory effusion of leukocytes and serum as shown at *a* ; *d*, artery with the end lost in a mass of leukocytes.

soft soap and spirit of wine with a dram of oil of cade to the ounce, rubbed in with a piece of moistened flannel, has been perfectly successful in my hands. Internally, cod-liver oil, iron,

and general invigorating measures are indicated in most cases. If the redness is marked, the inunction of oil after the baths, instead of the soap liniment, would be advisable at first. If there are only one or two patches, a weak Beiersdorf salicylic acid and creasote plaster would be a good application.

Besides the above affection there is a disease of the hair follicles, of which I have seen a few examples, truly inflammatory in my opinion, which may be thought to be as fairly entitled to the designation as the first one, but it is an uncommon and not very important affection.

Symptoms.—Firm, pale red papules, with a small collection of minute scales in the middle, the center of each papule being pierced by a hair, are arranged in irregularly circumscribed patches upon the extensor surfaces of the limbs, or occasionally on the flanks. The patches are few in number and feel rough to the touch, but not so much so as in the preceding affection. They may remain for many months, or even years, untreated. There is moderate itching and no special defect of health. I have seen it only in young adults.

In a case which was under treatment for psoriasis irregularly circumscribed patches of papules, like those just described, appeared symmetrically on the backs of the hands and fronts of the thighs where there had been no previous psoriasis. This is a very rare occurrence and suggests the possibility that the apparently primary affection is really a psoriasis pilaris.

Anatomy.—In a piece of skin excised from the thigh of this case I found cell effusion into the angles formed between the follicle and rete, greatest above, but extending in a minor degree nearly to the bottom of the follicle. The cells of the rete at the angle were elongated, and the whole layer adjacent to the follicle thickened, while there was considerable accumulation of horny cells at the mouth of the follicle, some adherent to the hair shaft, producing the funnel-shaped condition seen in keratosis pilaris; in short, it is a keratosis pilaris plus inflammatory effusion round the follicle (Fig. 20).

Treatment is the same as that for the first-described L. pilaris.

Under the head of L. pilaris some authorities, like Tilbury Fox, include inflammatory conditions of the hair follicles, secondary to chronic scabies or other diseases, producing irritation where the firm papules, with no central scales, are scattered over the trunk and limbs, but no designation is required for such a purely symptomatic condition.

LICHEN ANNULARIS (Galloway).*

This is a very rare eruption, of which there are only two indisputable cases on record.

In 1895 Colcott Fox showed at the Dermatological Society of London a ringed eruption on the fingers of a girl of eleven which had existed for two months; and a boy of ten was shown in 1898 by Galloway, in whom the disease had been present three years. These two cases were undoubtedly of the same character, and the eruption was limited to the sides and back of the fingers and thumbs, except that in Galloway's case a single nodule was present in one ear.

The lesions began as a nodule, which extended peripherally into a circular patch, and then into a round or oval ring by clearing *pari passu* in the center, where the skin became normal again or faintly atrophic; the border, an eighth of an inch wide, was smooth, rounded, projected the sixteenth of an inch above the surface, was of an ivory-white color and doughy consistence according to Fox, while Galloway described the border as hard. In Galloway's case there was a small common wart on the right third finger.

Dubreuilh in 1895 published a case which he considered to be of the same character in a woman of thirty-three with a bad circulation. The lesions were firm pale elevations on the radial border of the two index fingers, and on the ulnar border of the left thumb. They began five years previously, and slowly increased. The ring was pale, elevated a millimeter, slightly scaly, and firm to the touch. It was cured with Vidal's red plaster, but recurred five years later.

In Fox's case no etiological factor could be detected, while Galloway's was a delicate-looking boy who had gone through the gamut of children's diseases, and there was also the wart previously mentioned, which might possibly have some significance. There was no history of rheumatism either in the patient or the family in either case. Galloway's histological examination showed that the process was "a chronic inflammation of the

* "Lichen Annularis," by J. Galloway, *Brit. Jour. Derm.*, vol. xi. (1899), p. 221, with colored and microscopic plate, and abstracts and references to Colcott Fox's case and various others more or less resembling it. Compare with Granuloma Annulare.

upper layers of the cutis associated with the increase in the overlying epithelium" ; "the nature and distribution of the inflammatory infiltration resembled closely that of lichen planus—and although there were very wide clinical differences between the two diseases, the histological characters bring the lesion within the most strict definition of the term lichen."

The treatment adopted by Galloway was the application of a two to ten per cent. salicylic acid ointment, the administration of iron and cod-liver oil, and improved hygiene. With these the lesions gradually underwent involution, and in six months had disappeared, and the boy's health had much improved.

DERMATITIS.

There remain to be considered certain inflammations of the skin which have no special name, their peculiarities arising, not from the form and arrangement of the elementary lesions, but from their cause. Some of these causes exert their effect directly, *i. e.*, from external application, others indirectly, *i. e.*, when taken internally; and while they are classed, for the sake of convenience, under the name of dermatitis, and some qualifying term is added pointing to their origin, they have often but little in common, except their general title. The predominant lesion in the greater number of them is some form of erythema, but all of the elementary lesions may be excited, according to the susceptibility of the individual to the particular influence, its intensity, and the length of time it is in operation. The signs of inflammation—heat, redness, and swelling—are in proportion to the severity of the lesion. The several groups will be considered under the heads of D. traumatica, D. calorica, X-ray Dermatitis, D. venenata, D. medicamentosa, D. vacciniata, D. gangrænosa.

D. Traumatica. Under this head are included all kinds of inflammation set up by mechanical causes, such as contusions, abrasions, or excoriations, whether due to blows, pressure, friction (*e. g.*, from riding, rowing, clothing faulty in construction or material), or scratching to relieve the irritation set up by animal parasites, scabies, pediculosis, etc. The excoriations from scratching are often the most important to the dermatologist, and have already been described when considering the

pruritic or "scratched skin." The other lesions are so well known, even to the laity, as not to need detailed description.

D. Calorica. Extremes of heat and cold are almost equally capable of producing more or less severe inflammation of the skin, according to their intensity and length of time of the application. Erythema solare, or sunburn, is a familiar example of what may be produced by natural heat, and while it may be erythematous, vesicular, or bullous, it never goes on to complete destruction, as it may do from artificial or ordinary burns or scalds. Bowles,* however, has shown that it is not the heat rays, in all probability, but the ultra-violet or chemical rays which produce such violent inflammation, and, as is familiar to every climber, the reflection of those rays from snow considerably aggravates their effects; further, that red and yellow pigments stop these irritant rays; merely greasing the skin before exposure will also prevent sunburn, though not so completely as the pigments. Cold may also produce death of the part from prolonged anemia, or from too sudden reaction and consequent destructive inflammation.

X-ray Dermatitis. Exposure to the Röntgen rays when unduly prolonged, or too frequently used at short intervals, especially with soft tubes, is liable to set up a dermatitis which in slight cases only reaches to erythema followed by pigmentation, but is in some cases so severe as to destroy the vitality of the exposed part, and lead to the production of a dry superficial slough, which takes months to separate, and may leave an ulcer which takes months or even years to heal. Such cases were frequent in the early days of X-ray employment (Gilchrist collected twenty-eight cases), but are less frequent now. Several cases have come under my observation. One of them of moderate severity, after three exposures of an hour on the abdomen, was a hand-sized dermatitis, of which the central portion ulcerated and took four months to heal. In another case an adherent black dry slough, seven by five inches, was firmly

* "The Influence of Light on the Skin," etc. An introduction to a discussion at the Dermatological Society of Great Britain and Ireland in May, 1897. *Transactions of the Society*, vol. iii. (1897), and references to previous communications.

adherent nine months after two exposures of forty and ninety minutes respectively. In a third, four years after an attempt to radiograph the kidney, there were still ulcers of about an inch in diameter unhealed, while the rest of the hand-sized burn had cicatrized, leaving a closely meshed scarlet network of dilated capillaries all over the cicatrized area. In two other cases of X-ray burn I have seen a similar telangiectic network in the cicatrix, so it is probably a diagnostic feature. In a third case the same phenomena were present, though there had never been active inflammation. It is emphatically a misfortune that it is better to prevent than to cure, but while in most cases it may be prevented by being careful not to subject the patient to exposures with the tube in too close proximity or of too long duration or frequency, there is no doubt that, besides the quality of the tube, idiosyncrasy plays a part, and that a dermatitis may be set up in some persons by an exposure or exposures which would not do so in others. Moreover, in using the X-rays for therapeutic purposes, where repeated exposures have to be made and a slight amount of dermatitis is sometimes desirable, although the treatment may be left off as soon as erythema appears, the inflammation increases in intensity, sometimes for a week or more, going on to vesiculation, ulceration, and even sloughing, to the embarrassment and chagrin of both patient and operator.

According to Unna, in these cases the collagen (connective tissue) may be mainly affected. It becomes more brittle, and its staining reactions are basophile instead of acidophile, as it is when normal. Possibly this is the reason for the slow healing. In Gilchrist's case osteorathritis occurred. Experimenters whose hands are constantly exposed to the rays, in addition to erythema, sometimes shed the nails and hairs, but not permanently, unless they persist in the exposures. It has been suggested by Bowles and others that the effects of the X-rays are analogous to those of sunburn aggravated by the proximity of the lamp and the frequent repetition of the exposures.

Treatment.—Slight degrees of inflammation may best be treated by the frequent application of calamin lotion. More severe inflammations with exudation are best treated with lactate of lead lotion constantly applied, which subdues inflammation and heals superficial ulceration. Deep ulcerations may

be treated on ordinary surgical principles, but give great trouble, and if the size and situation permit may be advantageously excised.

Apostoli cured one case of great severity by the combined electric treatment, "*i. e.*, 1. the polar application of a galvanic current, in order to accelerate the fall of the eschar, and thus favor the tropical and ulterior trophic action of the static bath.

"2. Simple static bathing, which, by its general influence as well as by its direct and local action, hastens the work of repair and cicatrization of ulcers.

"3. The general action of a current of high frequency, which is destined to raise the coefficient of generation nutrition."

It is obvious that very few patients will be able to get all this, but in the case in question, which was of the worst type, healing took place under this procedure.

D. Venenata. This includes the various inflammations set up by numerous external irritations of animal, vegetable, or mineral origin. The effects produced on the skin are erythema, wheals, papules, vesicles, pustules, bullæ, or gangrene, according to the susceptibility of the individual, the virulence or concentration of the poison, and the length of exposure to its influence. Eczematous subjects are especially sensitive to such irritating influences, and in such persons eruptions are not only more easily started and more severe, but often persist long after the removal of the cause, in the form of an eczema, indistinguishable from ordinary eczemas of supposed internal origin.

It is impossible * in this work even to merely enumerate all the external irritants, and it will probably be more practically useful to give headings which will indicate under what circumstances they occur, and give examples under each. These include:

1. Articles in medicinal use applied externally.

The commonest are the well-known irritants—mustard, turpentine, cantharides, tartar emetic ointment, croton oil, mezereon, savin, arnica, iodoform, mercury, chrysarobin, orthoform, etc.

* The most complete account is that by J. C. White of Boston, "Derma titis Venenata," 1887, and supplementary papers.

The strong acids or alkalies or other caustics produce, as is well known, all degrees of inflammation up to complete destruction of tissue.

2. Dyes or other substances used in clothing or as cosmetics, such as anilin, arsenic, chlorid of tin, chlorid of zinc, and hydrochlorate of paraphenylene diamin (a hair-dye).

3. Articles used in trades and manufactures, such as bichromate of potash, aurantia dye, arsenic, etc.

4. Plant irritants, such as rhus toxicodendron and venenata and other species, primula obconica, the common nettle, several species of ampelopsis and heracleum giganteum, the flowers of doronicum pardalianches, or leopard's bane, cypripedium angelica, wet ivy, the bulbs of hyacinthus orientalis ascribed usually to raphids of oxalate of lime, but Freeman says due to an acarus. These are a few of the irritant plants met with in England, and White gives a long list which is being continually added to from all parts of the world.

5. Besides the irritant action so well known from the stings of bees, wasps, hornets, tarantula, etc., mention may be made of the urticarial and even more severe forms of dermatitis produced by contact only with jelly-fish and certain caterpillars, of which the "woolly bear" * is the chief offender in England; on the continent "bombyx processionea" produces more serious symptoms, one boy stung by several on the chest having had violent irritation, general sweating, and fever, followed by delirium, coma, and death. The long fine hairs which break in the skin are said to be the irritants. An Indian species produces gangrene. This class need not be further elaborated.

1. *Arnica rashes* were very common at one time, when the drug was a household remedy for bruises and other slight injuries; but its irritating properties are becoming more generally known, and it is deservedly falling into disuse. The commonest form is that of acuminate papules, like the milder form of rhus eruption to be presently described. I have known it produce an acute vesicular eczema, and in one instance, a pityriasis rubra universalis.

Chrysarobin.—The external application of this drug is liable to produce a peculiar deep, almost coppery red erythema, which extends a considerable distance beyond its site of application.

* *Lancet*, May 2, 1896, p. 1239, mentions several other species.

Thus, when applied to a part of the scalp, the whole scalp, face, and neck may be affected. There is conjunctivitis, and so much swelling that the eyes are closed, and it is liable to be mistaken for erysipelas.* In a few days, if the application is stopped, and often even when it is persevered with, the redness and swelling subside, and a dirty, purplish-brown desquamation ensues.

In two cases where I ordered it with lanolin, for alopecia areata, there was a copious outbreak of small vesicles also, not only on the face, but on the forearms, which presented a very eczematous appearance, but soon got well with calamin lotion. Brocq † relates that a man died in 1880 in the St. Louis Hospital with intense general erythema and severe symptoms of poisoning from its too extensive external use. In a case of Vidal's general exfoliative dermatitis of two months' duration, with intense fever, was brought on in the same way.

Croton oil and tartar emetic were formerly used as counter-irritants, and produced a pustular eruption, often so severe as to lead to considerable scarring.

Cantharides, mustard, and turpentine.—The effects produced by these drugs are so well known as not to need special description, and mezereon and savin are rarely used.

Iodoform.—This drug is a not unfrequent and unsuspected cause of eczemaform eruptions chiefly, both in patients and surgeons. Wathen of Clifton ‡ gives a personal experience of its effects excited by handling iodoform gauze; the eruption was of a vesiculo-bullous character. Jessop of Leeds also thinks that dry iodoform is worse than wet. Wathen found that boric acid and lanolin cream, or thick gruel with firm bandaging of each finger, gave most relief.

Orthoform § has been reported by Dubreuilh as having produced not only similar eruptions to iodoform, but even gangrene resembling lupus vulgaris treated by pyrogallic acid.

Mercury only excites irritation in very delicate skins, or when

* Such a case is recorded as erysipelas in *Med. Times and Gazette*, April 3, 1886.

† *Amer. Jour. Cut. Med.*, vol. iv. (1886), p. 24.

‡ *Trans. Derm. Soc. Great Brit. and Ireland*, vol. iv. (1898), p. 21.

§ *La Presse Médicale*, No. 40 (1901), p. 233. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 277, with several cases.

used too long or too vigorously in one place; its injurious effects may be avoided by frequent ablutions with soap and water, and changing the site of its application frequently.

From its over-use, however, a violent dermatitis may be excited. My late colleague, Berkeley Hill, asked me to see a case in his wards, of a patient who had rubbed in the ung. hydrarg. in a wholesale manner, and had set up a severe pityriasis rubra universalis. In former days this was less rare. Moriarty * published in his brochure several cases, two fatal in Dr. Gregory's practice; but in those days mercury was generally overdone.

Phenyl-Hydrazin-Hydrochlorid.—Although only rarely used in medicine as a urine test, the following case is mentioned because it illustrates in an extreme degree the growing sensitiveness to the action of an irritant which has once excited dermatitis. An analytical chemist displayed an idiosyncrasy towards this substance. The eruption had the appearance of an eczema and was at first local, but as his sensitiveness increased, not only did the primarily local inflammation generalize in a few hours, but the minute quantity of vapor conveyed in the clothes of his assistant, who visited him at his own house, excited an outbreak.†

2. *Anilin dyes*, especially the red ones, and J. C. White says the black also, are frequent causes of eruption nowadays, chiefly through clothing, such as gloves, socks, flannel shirts, drawers, etc., dyed with these substances. They are apt to excite an itching, red, papular eruption, in extreme cases going on to vesicles, pustules, etc. Though limited at first to the parts in contact with the dye, the eruption often spreads to a considerable distance beyond the part first affected, and while the primary attack may only last a week or two, by recurrences the process may go on for months. H. Lee records several such instances, and most dermatologists can recall cases from their own experience. Accidental contamination of the dye with arsenic is supposed to be the real cause of these eruptions, but some ascribe them to the anilin itself.

* "A Description of the Mercurial Lepra," Dublin, 1804. Also Alley, "Peculiar Diseases arising from the Exhibition of Mercury," Dublin, 1804.

† Dr. A. H. Hall, *Brit. Jour. Derm.*, vol. xi. (1899), p. 112, a good account with noteworthy remarks.

Hydrochlorate of paraphenylene diamin * under the influence of oxygen is converted into quinone ($C_8H_6O_2$). This property has led to its being used as a hair-dye, as tints from auburn to jet black may be produced. An aqueous or alcoholic solution of the diamin is first brushed or sponged on, and a few seconds later oxygenated water is similarly applied with immediate effect.

Unfortunately, quinone sublimes at comparatively low temperatures, and gives off most irritating vapors, which excites a dermatitis of erythema with swelling, papular and vesicular lesions being the most common. There is intense itching of the skin and pricking of the eyes. The distribution in the upper third of the face, the swollen eyelids, the vesiculation of the rim of the ears, are suggestive of the cause.

3. *Bichromate of potash.*—Workmen who use this drug in their trade, such as French polishers, autotype photographers, or those concerned in its manufacture, are liable to various eruptions.

In a case of my own, a French polisher, æt. forty-four, who had had several attacks, the eruption was limited to the palms, the whole surface of which was thickly covered with pustules an eighth to a quarter of an inch in diameter, with a red areola. Other workmen suffered similarly, but not so severely.

B. W. Richardson has given a good account of bichromate of potash poisoning. During its manufacture, the air being impregnated with the salt, the slightest abrasion gives it entrance, and an intense destructive inflammation is set up, with suppuration and ulceration, sometimes down to the bone. The glans penis and the septum nasi are liable to be destroyed; and in horses, not only the hair, but even the hoofs fall off. Richardson met with six cases among autotypers. In one, the rash was "like pityriasis rubra," in another there was "acute eczema of the arms and a scaly eruption on the palm like psoriasis, and the other cases were either like psoriasis, eczema, or pityriasis."

Hermann † also describes the ravages (produced both inside

*Cathélineau, *Annales de Derm. u. Syph.*, vol. vi. (1895), p. 24, and vol. ix. (1898), p. 63, publishes cases and Mewborn is quoted in *Lancet*, June 29, 1901, p. 1842.

†*Brit. Med. Jour. Epitome*, June 22, 1901, from *Münch. med. Wochensch.*, April, 1901.

and out) in the manufacture of this much-used but dangerous salt.

Aurantia, or Hexa-nitro-phenyl-amin.—This is an orange-yellow dye much used for cheap yellow leather shoes and other goods, and the workers in it are liable to a severe dermatitis on their hands.

In one of my cases the palms were covered with crowded but separate hemp-seed vesicles, and the backs also to a less degree with vesicles the size of a millet seed, and with marked swelling; the diagnosis was easy from the orange staining of the skin. The liquid is sponged on to the leather to be dyed, hence the predominance on the palms. Hellier * of Leeds records similar cases.

Arsenic.—Workmen who prepare skins and furs use lime and sulphid of arsenic, and are liable, besides eruptions such as may follow any irritant, to a persistent ulcer of the fingers, known among French workmen as Pigeonneau.†

Cocus wood.—Flute-makers who use cocus wood are liable to eczemaform dermatitis, probably from a resin in the wood which belongs to the family euphorbiaceæ, an order noted for its members exuding irritating and blistering products.

In one of my cases the eruption began two hours after beginning to saw up some cocus wood into blocks. His fellow-workmen were affected in a minor degree.

4. *Irritant plants* not used medicinally. Only a few of these can be mentioned, as their name is legion.

In America,‡ especially in the Far West, the *Rhus venenata* and *Toxicodendron*, popularly called the poison ivy or oak, or poisonous sumach or dogwood, are a perfect scourge to travelers, the irritant, according to Maisch of Philadelphia, being a very volatile acid called toxicodendric acid. The variation in susceptibility to it is very great, some being able to handle it with impunity, while others cannot be in the neighborhood of the plant without suffering severely.

Dr. E. H. Smith of Santa Clara, California, which is the home of the plant, wrote to me the following:

* *Brit. Med. Jour.*; November 19, 1892.

† Brocq and Landry, *Annales de Derm.*, vol. ii. (1901), p. 305, illustrated.

‡ A case occurring in England is recorded by Nicholson of Hull in the *Brit. Med. Jour.*, March 4, 1899, p. 530, with illustrations of the plant.

"If the skin is wet from perspiration or rain it will be more susceptible, and then persons who have had immunity for years will be attacked.

"It generally begins on the wrists, spreads to the hands, especially between the fingers and around the joints. It often attacks the genitals or face primarily—to which probably it is conveyed by the hands—and spreads thence over the whole body in from eight to fourteen days. In face attacks violent conjunctivitis may occur. It begins by intense itching and a sense of heat, next the skin reddens, and in from two to forty-eight hours an herpetiform eruption appears and great edema ensues, and it requires about two weeks to run its course. The eruption may also be bullous or pustular or combined with the other elementary lesions."

On the subsidence of the eruption several small, whitish, smooth-topped deposits may be left beneath the outer layer of the skin. These, without fresh exposure to the shrub, spread and go through all the characteristic stages exactly as in attacks from direct contact with the plant. Dr. Smith himself went through four such secondary attacks in two months without having been near the plant, and the last attack was exactly like the first. It may be conveyed also indirectly, as by wood cut in the vicinity of the rhus and handled by people who have not been near the plant. It has also been conveyed by a bath brush.

Eczema and furunculosis are mentioned as secondary effects. Dr. Smith scouts the toxicodendric acid theory and invokes a "germ" as the cause. His treatment is to apply a lotion, on absorbent cotton under oiled silk, of sodii hyposulphitis ℥ij, acid carbolic ʒj, aq. distillatæ ad Oj.

I should use the lactate of lead lotion, but many American writers say that the treatment should consist of mildly astringent lotions, such as Goulard water, bland ointments, and dusting powders; but better than all, according to Duhring, is the fluid extract of grindelia robusta (ʒj to ℥iv or ℥vj of water). White recommends black wash, to be applied for a quarter of an hour every four hours. Brown advocates bromini ♏v to ℥j of olive oil or simple ointment. Tannin or sulphate of zinc lotions, and vapor baths are also suggested. The pustular eruptions are best treated with ointments (iodoform or iodol

gr. 3 to 5 to the ounce of simple ointment), or oleate of zinc or lead, spread upon strips of linen, and applied closely and continuously, with rest to the affected parts, especially if they are the hands or feet. These plans generally effect a speedy cure.

*Primula Obconica.**—Since this plant has become a common one in conservatories many cases of dermatitis from handling it have been published in the journals, and not a few have come under my notice. Owing to the cause being usually unsuspected by the patient, difficulties in diagnosis not unfrequently arise. A severely itching, papular, erythematous, and vesicular eruption of an eczematous type, or occasionally a bullous eruption, is excited in certain people only, and a red urticaria in a few others. The poison is supposed to reside in the hairs of the plant.

The victims are generally amateur or professional gardeners, and the apparently mysterious recurrence of the eruption each time they handle the plant leads to all sorts of errors in the diagnosis of the cause. The irregular distribution of the lesions and the predominance in exposed parts or in regions frequently touched by the hands will often give a clew to the cause being from without.

The treatment would be the same as for rhus poisoning, for most of the rashes from these causes. Probably lactate of lead lotion would be the most universally applicable, and calamin lotion where the skin is unbroken.

Feigned Eruptions.† Besides their legitimate use, various irritants may be fraudulently employed, chiefly by hysterical women, mendicants, soldiers, prisoners, or domestic servants, either with a sordid or morbid object of obtaining sympathy, or to avoid some irksome duties. Unless the physician has a sound knowledge of the effects of true disease, they may give a good deal of trouble, and the impostors are often successful in their object when there is an apparent absence of adequate

* *Brit. Med. Jour.*, September 28, 1889, and vol. ii., 1890. *Lancet*, ditto.

† A good many examples are to be found in vol. i. (1870) of the *Brit. Med. Jour.*, by the late Mr. Startin, Hilton Fagge, W. Roberts, etc. See also a clinical lecture by Colcott Fox, *Illustrated Med. News* November 2, 1889.

motive. The following points will often aid in detection; but let not the young physician expect credit for so doing, as the friends of the hysterical one are often almost as angry with the discoverer as they are with the perpetrator of the deceit. A circumstance which often confuses the issue is that a genuine lesion, the result of accident or disease, often precedes and suggests the fraudulent imitation.

The eruption or lesion nearly always differs from what may be called the natural eruption it is supposed to represent, and is often unlike any known disease. Thus, if it is an erythema, it is probably sharply defined and irregular in shape, and with a clumsy operator may even be angular in outline. If it is gangrenous and produced by a liquid caustic, in addition to the irregularity it is common to find that some drops have been spilled away from the main lesion, or that it has run down in a streak, or that it has damaged the clothing or stained the fingers or nails. Then the lesions are either single or few in number at least, at each supposed outbreak, though, when the deception has lasted a long time, the number of lesions in the aggregate may be very large. They are usually arranged unsymmetrically, mainly on the left side, especially on the limbs, or at all events in easily accessible positions. The fraud may be betrayed by traces of the special agent employed on the skin or clothing, such as particles of mustard or cantharides, the smell of turpentine, the yellow stain of nitric acid, etc. Spontaneous superficial gangrene, especially in a young woman, should always be regarded with suspicion.

A few examples may be given. A girl of seven was brought to U. C. H. for longitudinal scabbed patches on the back of the phalanges, for which she had been sent to the seaside on several occasions; she confessed that she liked going very much, and stopping her jaunts stopped the lesions, which were probably burns with a match. A girl of eighteen simulated chromidrosis. While she was having a bath, blacklead was found in her pockets. In the case of a servant with a gangrenous patch on the leg, a yellow streak ran round to the calf away from the main patch. The diseases most frequently simulated are erythema, eczema, pemphigus, gangrene, ulcerations, morbid growths or discolorations, changes in the cutaneous secretions, etc.

C. Fox and Sangster * have each reported a case produced by mechanical means; the patient rubbed a spot with the end of her fingers, moistened with saliva, until a sore was the result. Cases such as these have been reported by Erasmus Wilson and others as "neurotic excoriations," and correctly so, but not in the sense intended by the authors. Sangster † showed such a case at the Congress in 1881, which at the time he thought genuine, but subsequently ascertained to be produced in the same way as his other case already mentioned. Bristowe ‡ also records a case where pieces of skin were snipped out with scissors.

The best chance of stopping these tricks is not to let the patient know that she is suspected, but to put her under secret surveillance until she can be detected *in flagrante delicto*, so that she is convinced the "game is up." Otherwise the accusation will only lead to indignant denials, the *modus operandi* will remain undetected, and she will either persist in her imposture under different auspices, or will take the opportunity of a graceful retreat by getting well under some other doctor's treatment. Thus the diagnosis of factitious origin will appear to have been incorrect.

DERMATITIS MEDICAMENTOSA.§

Synonym.—Drug eruptions.

It is fortunately uncommon for eruptions to be produced by drugs, yet the number that may produce them is considerable. In the majority of instances there is either an idiosyncrasy on

* *Lancet*, December 30, 1882.

† *Lancet*, June 3, 1882.

‡ *Lancet*, January, 1883.

§ *Literature.*—G. Behrend. "Zur allgem. Diagnostik der Arzneiausschläge," *Berlin klin. Wochensch.*, vol. xvi. (1879), p. 714. Bérenguier, "Des éruptions provoquées par l'ingestion des médicaments," "Thèse de Paris," 1874, p. 45. Morrow on "Drug Exanthemata," etc., *New York Med. Jour.*, vol. xxxi. (1880), p. 244; and a monograph published by Wood & Co., New York, 1887, with bibliography, of which a new edition for the Syd. Soc. has been prepared by Colcott Fox in "Selected Monographs on Dermatology," 1893, with copious bibliography. Van Harlingen, "Medicinal Eruptions," *Amer. Arch. of Derm.*, vol. vi., p. 337—very complete and full of references. Discussion on Drug Eruptions,

the part of the patient, or renal or cardiac disease interferes with elimination, or the dose is large, the medicine long continued, or a combination of these factors is present. Thus, there are many instances where a very small dose has been, and always is, capable of producing an eruption in that particular patient, and in many the susceptibility tends to increase, and in these a larger dose, or perseverance in taking the drug after the appearance of the eruption, may considerably aggravate the form it takes; a partial erythema becoming general, and even hemorrhagic or gangrenous, or a vesicular eruption becoming bullous or pustular. Whilst there are many forms of eruption due to drugs, only two—iodine and bromine, and their salts—are capable of exciting lesions which are special and peculiar. In all the rest the eruption itself follows a recognized type, and it is only from the circumstances under which it occurs that the cause is ascertainable.

In the following account only those eruptive phenomena are considered which are the result of absorption of the drug into the organism either from ingestion by the mouth or rectum, subcutaneous injection, or absorption through a wound or even the unbroken skin, as in mercurial inunction.

Inflammations produced by drug irritants, such as arnica, tartar emetic, etc., are described with lesions produced by other irritants under Dermatitis.

Antifebrin or **Acetanilid** produces a kind of cyanosis when the drug is long continued or the dose is large. The slaty-colored anæmia is very suggestive, and is probably due to a change different to that of venous blood, in a case of poisoning, the blood being dark blue, as in anilin poisoning. Small doses will sometimes produce it. Exalgin and monobrom-acetanilid have a similar effect, the latter sometimes after a small dose. It has been suggested that free anilin is produced.

Antipyrin.* Since this drug has come into common use numerous cases of eruption have been reported. The back of

Trans. of Internat. Med Cong. Berlin, 1890. Also Brooke and C. Fox's papers in *Brit. Jour. Derm.*, October and November, 1890. "Dermatoses produced by Drugs," by Jadassohn. A translation by Elkind forms one of the Selected Essays of vol. clxx. (1900) of the Syd. Soc.

* *Literature.*—This is very extensive. Morrow's Syd. Soc. Edit. gives

the hands is especially liable to be attacked, and in one of my cases was the only part. The eruption may be erythematous, purpuric, urticarial, vesicular, or bullous. The erythematous is by far the most common, and is often followed by pigmentation.

Spitz collected fifty-two cases, and of these forty-one were morbilliform, four urticarial, and the others papular erythema. It may also be scarlatiniform, in finger-nail patches up to patches the size of a crown-piece, or there may be extensive diffuse redness, or there may also be pearly spots.

The eruption may be general or partial, but symmetrical, affects the chest, abdomen, and back, the limbs and the extensor aspects more than the flexor, but every part, even the palms and soles (Ernst), has been involved in one case or other. Benzler and Ballin * have had similar cases. In a case of Archer's bullæ formed a ring round the arms, the eruption being preceded by intense itching. The mouth and genitals may also be affected. The morbilliform rash may be associated with oro-nasal catarrh. The patches may be formed by coalescence of one of the papular forms, as in Blomfield's cases, or the smaller patches may arise primarily and closely simulate the macular syphilid, especially when the oral mucous membrane is involved and mucous plaques are simulated, or when the eruption is on the palmar surface as well as the back of the hands.

In one of Blomfield's cases it began inside the knee, and spread from that all over the trunk; the eruption was of a deep red, papular or morbilliform, becoming confluent, but with free intervals of white healthy skin which gave it a marbled appearance, or it enlarged into patches half an inch in diameter; these began to clear in the center, and faded altogether in from five days to a week. There was itching in most cases, moderate desquamation, and some staining left. Acuminate miliaria-like papules, with profuse perspiration, have been noted. It seldom lasts more than five days, and may be followed by desquamation and pigmentation. It generally recurs if the drug is resumed even in small doses. At the same time, in several in-

references to 1892, and Apolant, *Archiv f. Derm. u. Syph.*, vol. xlvi. (1898), p. 345, gives a very copious bibliography.

* Jadassohn, *loc. cit.*, note, p. 229.

stances, the rash faded without the drug being stopped. A. Fournier records three cases in which the penis turned black after antipyrin from pigmentation following an erythematous eruption. The erythematous, urticarial, and slighter vesicular eruptions may occur after moderate doses, but the purpuric and bullous eruptions have generally been after large doses. By rubbing in a ten per cent. ointment Wechselmann produced in susceptible patients the same eruption as was produced by the internal administration of the drug. Strauss records a case of purpura limited to the back and lower limbs, but very large doses, producing collapse, had been administered; while in most of the other cases, moderate doses, such as twelve grains, had been given. Veiel * records a case of bullous eruption in a man of thirty-three which appeared on the glans penis, between the toes, on the lips and hard palate, while it was red and wheal-like on the palms and soles. Petrini's † case was still more developed, some of the bullæ being the size of a five-franc piece, and the eruption was nearly universally distributed.

The physiological action of the drug is of itself a predisposing factor. It produces paralysis of the vaso-motors followed by dilatation of the cutaneous vessels. After large doses it occurs free in the urine. Mibelli has demonstrated antipyrin in the liquid of bullæ by perchlorid of iron, which turns it red, and Tonnel and Raviart by iodin dissolved with iodid of potassium.

Argyria. See under Pigmentation.

Arsenic.‡ This, being a powerful irritant, is liable to produce inflammatory eruptions when in direct contact with the skin, but

* *Archiv f. Derm. u. Syph.*, vol. xxiii. (1891), p. 33.

† *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 170.

‡ *Literature.*—Imbert-Gourbeyre, "Histoire des éruptions arsénicales," *Moniteur des Hôp.*, 1867, p. 317, quoted by Van Harlingen; also "De l'action de l'arsenic sur la peau," Paris, 1871.

J. Méneau of Bourboule, *Annales de Derm. et de Syph.*, vol. vii. (1897), p. 305. With copious bibliography and good abs., *Brit. Jour. Derm.*, vol. ix. (1897), p. 368.

"The Action of Arsenic on the Skin, as observed in the Arsenical Beer Epidemic," H. G. Brooke and Leslie Roberts, *Brit. Jour Derm.*, vol. xiii. (1901), p. 122, highly illustrated.

"An Account of the Epidemic Outbreak of Arsenical Poisoning in

as it is only like other irritants in this respect, these eruptions need not be gone into here. Eruptions of various kinds may, however, arise from its internal administration. Imbert-Gourbeyre, Méneau, Brooke, and Roberts have written very good monographs on this subject. Urticaria is one of the most common forms of eruption; according to Imbert-Gourbeyre, four minims three times a day for three days produced it in one case; Méneau, however, does not confirm this.

Imbert-Gourbeyre states that the following eruptions may occur: erysipelas-like dermatitis of the face and eyelids, often becoming vesicular; a papular rash on the face, neck, and hands morbilliform or like a papular syphilid. The papules are few, small, and separate at first, but subsequently in groups; these enlarge and coalesce into patches, which may be large and disseminated on the neck, or there may be pin's-head-sized papules on the forearms, with itching. There may also be erythematobullous, pustular, ulcerative, or gangrenous eruptions, but they have, as a rule, only followed large and toxic doses, but Bazin, after giving one-thirtieth of a grain once a day for two weeks in a case of eczema, observed an eruption limited to the right flank, consisting of discrete papules and pustules, an ulcer one centimeter broad, and two ecthymatous lesions, but this may have been a severe zoster only. Gangrenous lesions especially affect the genitals, but are not confined to them.

Méneau adds to this list pruritus and general or local desquamation, scarlatiniform erythema, petechiæ (rare); vesicular eruptions * simulating scabies, eczema, or miliary vesicles.

Herpes zoster has followed the administration of arsenic in so many instances, as first pointed out by Hutchinson, who has been corroborated by so many authors, that it can be no accidental concomitant. Thus Railton in ten cases of therapeutic dosing for chorea noted three cases of herpes zoster, and several have fallen under my own notice. Sturk produced two attacks of facial zoster by giving arsenic. Méneau says the

1900," E. S. Reynolds, *Med. Chir. Soc. Trans*, vol lxxxiv., 1900. The nerve symptoms have a prominent place, but there are some valuable observations on the skin lesions.

* Ohmann-Dumesnil records a case of vesicular eruption on the face and buttocks from a single large dose of arsenic. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 192.

vesicles are smaller than those of ordinary zoster, and may be accompanied by erythema, eczema, edema, desquamations, etc. I am inclined to think the distinction fanciful, and believe that arsenical zoster is not different to ordinary zoster; and as arsenic is known to be capable of producing peripheral neuritis and probably inflammation of the ganglion also, the explanation is not far to seek. The very large number of cases in the Manchester epidemic is conclusive of the relationship and gave Reynolds the first clew. Probably the most common results of prolonged or excessive administration of arsenic are general pigmentation and keratosis, preceded and accompanied by hyperidrosis of the palms and soles.

Pigmentation following arsenic is now well known.* Reynolds says that it is always preceded by erythema and followed by pigmentation, but I do not think this is always so. At the commencement, as can be well seen on the abdomen, the hair follicles themselves escape, so that there are white dots on a dark ground, which is very characteristic, but ultimately the discoloration is uniform. The color is sepia or yellowish-brown, occasionally almost black. There are usually lighter areas interspersed in the diffuse form. It may also occur in dots or in patches of variable size. In children it may occur even with moderate doses, but in adults it is only after large doses or long-continued use. The neck, axillæ, abdomen, and groins are the parts first involved, and the exposed parts are less pigmented than covered parts. Gubler thinks it is true pigmentation, and not due to mere deposition of the metal in the tissues. Against this may be cited the fact that when psoriasis is cured by arsenic, marked pigmentation often ensues, strictly limited to the sites of previous eruptions. Recent pigmentation tends to fade, but when due to very prolonged administration much of it may be permanent; I have seen pigmentation of several years' duration. Brooke and Roberts show that arsenic is deposited in the epidermis.

Keratosis, or thickening of the horny layers of the palms and soles, begins round the sweat follicles, so that the surface is covered with small nodular shagreen-like or warty thickenings.

* Author's Atlas, Plate XXXVII., illustrates stages of pigmentation and early keratosis, and Plate XLIV., Figs. 3 and 4, a more advanced condition of the latter.

Gradually the intervals are filled up, and uniform thickening of the horny layer or keratosis is established just like the congenital form. An analogous thickening occurs over the knuckles and elbows, a whitish powdery appearance being produced, with slight resemblance to psoriasis.

In the more severe cases, such as in the Manchester epidemic, the palms and soles were red, tender, and there was numbness, tingling formication, and anesthesia (Erythromelalgia). General itching was often present and other symptoms of peripheral neuritis.

Hutchinson * has drawn attention to the occurrence of epithelioma of the palm due to arsenic. I have had an opportunity of observing how this occurs. The warty thickening already described on the palms becomes more pronounced in some of the lesions, and epithelioma gradually develops on the papillary overgrowth. This in one of my cases occurred forty years after the arsenic had been given up, and also illustrates how persistent the keratosis may be; but slight degrees of it may disappear. Arsenic is very liable to aggravate acute forms of skin inflammation.

The nutrition of the nails is altered; they are whiter, cracked, thin, and towards the tip almost papery and much flattened (Reynolds). In some cases there were transverse ridges.

Belladonna. A diffuse erythematous blush and a scarlatiniform erythema, chiefly affecting the face and neck, have been described as due to belladonna, occurring chiefly in children, even when small doses have been taken. I have seen large red patches paling on pressure, and the whole face and trunk suffused deep red in cases of belladonna-poisoning, but have rarely met with it after medicinal doses, although I have prescribed it in twenty- or thirty-minim doses of the tincture, in hundreds of cases of whooping cough. In a case at St. George's Hospital, kindly shown me by Dr. Whipham, a man of forty with supposed typhilitis wore a belladonna plaster for a week, and then took two seven-drop doses of the tincture; the next day the hands and feet were swollen, red, and tense. When I saw him the palms were deep red with thickening of the epidermis, the

* Hutchinson's smaller Atlas, Plate XX. Plates XVIII. and XIX. show keratosis of the elbows and hands.

soles were less affected; over the knuckles and all points of pressure and redness was intense, and capillary pulsation could be demonstrated by slightly flexing the joint. Dreyfous records a scarlatiniform eruption and papular erythema, with intense itching, after taking two grains of the extract in the course of five days, followed by a vapor bath.

External applications of belladonna preparations frequently excite erythematous, papular, and vesicular eruptions. In one of my cases, on two occasions, belladonna fomentations made with the glycerin of belladonna extract, and applied to a gouty foot, produced a copious and severe outbreak of vesicles and bullæ on the foot. The emplastrum belladonna often excites an itching erythematous or even eczemaform eruption; and Tom Robinson * records a case in which splashes of fresh belladonna juice or atropin powder set up a smart eczemaform eruption in a pharmacist's employee.

Benzoate of Soda. Nicolle and Halipré † record a case of erythematous patches and papules of small size and elevation; after three doses of fifty centigrams they came chiefly on the extensor aspect of the wrists, elbows, and knees, did not spread after the drug was stopped, and began to fade in twenty-four hours.

Boric Acid. Molodenkow ‡ of Moscow washed out a pleural and a lumbar abscess cavity with a five per cent. solution for an hour, a large quantity of the drug being employed, and "the next evening erythema appeared on the face, and spread on the third day to the neck, chest, and abdomen, then to the thighs, small vesicles appeared on the face and throat, the sight became dim, and both patients died, conscious to the last, one on the fourth, the other on the third day." Bruzelius § reports a similar case, but with recovery, after rectal injections of two pints of a four per cent. solution. Another case is reported by Johnson of Norway. Vincent reports two cases, both in subjects with

* Case of cutaneous antipathy to atropin. *Brit. Med. Jour.*, September 26, 1896, p. 881.

† Quoted in abs. in *Mal. Cut.*, vol. x. (1898), p. 709, from *Normandie Médicale*, 1898.

‡ Molodenkow, quoted in *Lancet*, May 6, 1882.

§ Bruzelius, *Hygeia*, 1882.

renal disease, Corlett saw six cases when treating diphtheria with 3j doses of the drug, and G. Lemoine met with a case with febrile symptoms from dressing a bed-sore with the powdered boric acid.

Burning of the skin, which swelled, looked charred, and subsequently exfoliated, followed the packing of the upper third of the vagina with boric acid in a case of Welch's. Fordyce * gave thirty grains daily for a month for cystitis: a multiform erythema developed on the trunk and spread over the extremities; there was extreme and painful edema of the eyelids and conjunctivitis. The drug can be detected in the urine,† and as it is commonly used in milk and other foods as a preservative, this may be useful for diagnosis.

Borax, given internally, in five-grain doses, for epilepsy appeared to produce psoriasis of the usual type in three cases under Gowers. This experience is confirmed by Liveing. Féré and Lamy record two cases of eczema with gastric disturbance excited by it, but both patients had seborrhea of the scalp, and had had previous attacks of eczema. There is also a peculiar dryness of the skin and mucous membranes, the latter being reddened and denuded of epithelium, and sometimes the hair falls out.

Féré ‡ also records pink or red confluent plaques followed by fine desquamation. Papular eruptions with or without pruritus, which may become confluent and be followed by desquamation. Petechiæ are sometimes seen.

A diffuse, erythematous, morbilliform eruption followed the administration of "tartarus boraxatus" § in large doses for two weeks by Alexander.

Bromine and Bromids. ‖ The eruptions met with in connec-

* *Amer. Jour. Cut. Dis.*, vol. xiii. (1895), p. 499.

† Make the urine alkaline by soda, evaporate to a syrup, mix with some pure white sand, evaporate to dryness. Powder the residue, cover it with alcohol, and add a few drops of strong sulphuric acid. On igniting the alcohol it will burn with a green or green-bordered flame.—Morrow, *Syd. Soc. Ed.*, p. 403.

‡ *Brit. Med. Jour. Epitome*, January 6, 1895, "Borism."

§ Tartarus boraxatus is supposed to be borated cream of tartar. The case was published in *Vierteljj. f. Derm. u. Syph.*, vol. xi., p. 110.

‖ Author's Atlas, Plate XXXV., shows an extreme case from long-continued ingestion of the drug of the confluent form. It also illustrates

tion with these drugs are pustular, erythematous, urticarial, bullous, and squamous. The description of bromid of potassium eruptions applies to those produced by any of the other salts of bromin.

The great majority are pustular, and these may be discrete, acneiform, furuncular and confluent, or anthracoid. The discrete acneiform is very common upon the face, chest, or back, the scalp, and round the hair follicles of the thigh and leg. The pustules are yellow, on a raised red base, from a hemp seed to a pea in size. The confluent form is less common. Some of the earliest cases were reported by Cholmeley, Lees,* and myself,† and they are now too numerous to specify. It is very distinct from all other eruptions except those of iodid, which are often very similar, but usually distinguishable. Convex, crimson, much-raised, circumscribed, oval, or roundish elevations are formed on the face and limbs, rarely on the trunk. The top of these elevations is covered with minute, closely aggregated, yellow, pustular points, almost like a carbuncle, but there is no red border or brawny induration, and the swellings are soft, almost fluctuating, and dry into a scab in the center, even while there are pustular points near the periphery. Ultimately a yellowish or black (from hemorrhage), irregularly sulcated scab is formed, and when this is removed an irregular ulcer may be left, but, as a rule, if the drug is not continued the lesions dry, the swelling subsides, and the scab is thrown off, without even leaving a scar, though the skin has a purplish or brownish stain on the site of the eruption for a considerable time. There are nearly always some discrete lesions as well. One peculiarity is its tendency to commence in scar tissue; in three instances, in my own experience, it was on the site of the vaccination scars, and in one limited to that position, the lesion, with its central scab, being very like a vaccination pustule of about the tenth day; in the case of an adult epileptic, the eruption was limited to the scar of an old strumous ulcer of the leg, in another it was on the scar of a recent burn. Another point is that the eruption

lesions, which have been called by various observers granulomatous, papillomatous, ulcerative, and even "epithelial ulcer."

* *Path. Soc. Trans.*, vol. xxxviii. (1877), p. 247, with colored plate.

† *Ibid.*, vol. xxix. (1878), p. 252, with colored plate. Both of these give a very good representation of the eruption.

continues to come out, and sometimes does not even commence, until after the drug has been stopped for some days, or even weeks; and Cavafy showed a case at the London Dermatological Society in which there was an eruption very like the "Iodid Hydroa" of the Sydenham Society's Atlas, and the patient had not taken bromids for three months previously.

Infants are more liable to confluent eruptions than adults, and it has been thought that a combination of iodid with bromid increases the liability to them. Deficient kidney elimination is also a factor both for this and iodid eruptions, but very small doses will produce the lesion where there is an idiosyncrasy, as little as a grain three times a day in an infant given by the mouth, and it has occurred in sucklings whose mothers were taking the drug. As a rule, however, large doses are more likely to produce it; hence it is common in France, where doses of ten grams and upwards are not infrequently given. Papillary hypertrophy sometimes follows, as well as accompanies, the eruption, as I have myself seen; while Veiel describes large prominences on the face and legs, like ordinary warts, and not consecutive to other lesions. Fatal cases are known, but due to the general effects of the drug, not to the skin lesions. Two are reported by Hameau and Eigner, and were women, æt. twenty-two and nineteen respectively. Both had been taking enormous doses for a year previously. In two epileptics reported by Greenlees only twenty-five grains three times a day had been given for a few weeks.

A furunculoid eruption, and groups of indolent acneiform pustules on the legs, which left scars, have been described by Voisin. Both he and Van Harlingen describe ecthymaform pustules, but these may well be accidental from pus inoculation.

Erythematous eruptions may be diffuse but limited to the lower extremities (Veiel), in patches, finger-nail to pea-sized, in various parts of the body, roseolous (Bedford-Brown) and papular, but this is usually an early stage of the pustular form. Further erythema nodosum, or something very like it, is described by both Voisin and Veiel, occurring on the legs. In a case of Horrocks * similar lesions came on the legs and extensor surface of the arms and forearms, and subsequently indistinct vesicles formed upon them.

* *Path. Trans.*, vol. xxxiv., p. 272, and also p. 273.

In this form of eruption, as I have seen it, the lesions are more brawny and defined, and less tender than in true erythema nodosum, and not necessarily situated over the superficial bones.

Echeverria describes a case with a diffuse, papular eruption over the elbows, knees, legs, and back of hands. He says that a brownish discoloration of the forehead and neck is also to be met with, and that painful subcutaneous suppuration may occur. Duhring saw a diffuse erythema of the face and neck, accompanied by maculo-papules, flat papules, and pustules.

All the eruptions are probably only stages or modifications of the ordinary pustular eruptions. Urticaria is spoken of as of doubtful occurrence; it may occur after iodid, and probably after bromid. Saundby's case was complicated by the patient taking thirty minims of hydrobromic acid at the same time as the bromid.

Veiel and others describes a squamous eruption like seborrhea, and Voisin records a moist eczema of the legs with pityriasis capitis. A bullous eruption is recorded by Wigglesworth * in an epileptic lady who had taken bromid for some time. Slightly acuminate bullæ came out on the trunk, from the size of a split pea to that of the finger-tip; some were hemorrhagic; they ruptured and left an excoriated surface; the rash disappeared soon after the discontinuance of the bromid.

A *bromoform* eruption in a child consisted of papules, pustules, superficial and raised ulcers, and papillomatous tumors of the characters already described for bromids; twenty-three grains spread over twenty-five days had been given for pertussis.†

Infiltrated granulomatous patches occasionally occur, as in Pini's ‡ case, similar to what are rather more frequently seen after iodids.

Anatomy.—Much dispute has arisen as to whether the sebaceous glands are the seat of the lesion. The anatomy of the pustular lesions has been investigated by Neumann,§ S. Mackenzie,‖ jointly by C. Fox and Gibbes, Jacquet,¶ etc. Neumann found that the inflammation began first round

* *Arch. f. Derm.*, vol. v. (1879), p. 371, in discussion on iodid bullæ.
† Julius Müller, *American Medico-Surgical Bulletin.*
‡ *Archiv f. Derm. u. Syph.*, vol. lii. (1900), p. 163, illustrated.
§ *Viertelj. f. Derm. u. Syph.*, 1874, p. 395.
‖ *Path. Trans.*, vol. xxxv. (1884), p. 400, with lithographs.
¶ *Med Soc. Trans.*, vol. ix. (1886), p. 51.

the sebaceous follicles, and later the hair follicles and sweat glands were involved, while there was considerable hyperplasia of the epithelial layers. S. Mackenzie found that there was: (1) active hyperemia of the corium, with exudation of colored and colorless corpuscles, especially in the neighborhood of the papillæ; (2) minute abscesses in the vicinity of the hair follicles and sebaceous glands; (3) small multilocular vesicles in superficial layers of the epidermis. Hence he infers that the fluid part of the exudation tends to reach the surface and form bullæ more rapidly than the corpuscular part, which accumulates near the hair follicles and sebaceous glands, and forms points of suppuration. Fox and Gibbes found that the changes were chiefly perivascular, but involved the sweat-gland ducts, and regarded any changes near the sebaceous glands as accidental. Séguin found great hyperplasia of the prickle-cell layer. On the whole, it seems probable that the seat of the lesions is at the vessels, and that the glands or follicles are involved simply because they are highly vascularized, but that they are not always involved, or in any way necessary for the production of the lesions, is shown by their occurence in, and even preference for, scar tissue.

Diagnosis.—The discrete lesions differ somewhat from ordinary acne, they suppurate more freely, and the contents are more distinctly purulent and of thinner consistency; the red base is usually of a dusky hue, and there has been no antecedent comedo. These differences are just sufficient to excite inquiry as to whether bromid is being taken. The confluent form is very distinctive. The aggregation of pustular points on a raised red plateau, too soft for a carbuncle, and comparatively painless, and perhaps the position of the lesions, render the diagnosis possible from everything but the similar iodid eruption. Moreover, confluent pustular lesions are exceptional in iodid eruptions and common in bromid rashes. On the other hand, bullous eruptions are rare after bromids and comparatively common after iodids.

Treatment.—Stop the administration of the drug, give liq. arsenicalis in ♏iij to ♏v doses three times a day, and apply subacetate of lead lotion two per cent., or salicylic acid gr. i to ℥j of water, on lint covered with oiled silk, as recommended by Prowse. Where, as in epilepsy, it is necessary to go on with the bromid, the addition of a drop or two of liq. arsenicalis to each dose of the mixture will materially control, if it does not entirely prevent, the eruption; and in most cases, then, it is safe to stop the bromid for two days in each week. The liability to pigmentation and keratosis from the long-continued administra-

tion of arsenic must be borne in mind. I have repeatedly seen both in chronic epileptics.

Féré tried to produce intestinal antisepsis by giving naphthol β and salicylate of bismuth, and the fungating eruption disappeared without the bromid being stopped. Salol gr. 5, *ter die*, would have the same effect, and would not be injurious, as arsenic is, when taken for long periods.

Cannabis Indica. Nevins Hyde * reports a case, the only one on record, in which a grain of the extract, taken overnight, produced the next morning a general eruption consisting of disseminated vesicles, with clear contents, from a pin's point to a pea in size, attended with considerable itching, and subsiding without treatment in a few days, leaving a transient pigmentation.

Cantharides. Erythematous and papular eruptions in various parts of the body, but especially in the genitals, have followed the internal use of cantharides. Generalized vesicular and other eruptions starting at, or at a distance from, the site of a blister are analogous to what often occurs after irritant dermatitis from any cause.

Capsicum. An erythematous eruption may sometimes follow the ingestion of large doses, and Allen reports a case of papulo-vesicular eruption all over the body after its administration internally.

Chinolin† has been given in typhoid fever. In six out of twenty cases Draper observed an erythematous rash. Henchen and Laache publish cases.

Chloral Hydrate. Various eruptions, mostly of erythematous type, have resulted from the use of chloral. The most common is the kind of which Gee reports two cases: a dusky red papular eruption, surrounded by a more diffuse redness of the face and neck, and patchy or mottled red spots on the extremities, especially near the articulations, which were all more or less affected. The eruptions are generally of short duration, and there is no itching or constitutional disturbance as a rule, but there are ex-

* *New York Med. Record*, May 11, 1878.

† Morrow, *Syd. Soc. Ed.* Note by Fox, p. 455.

ceptions, as in Köbner's case, where there was burning and itching and desquamation, followed by persistent general erythema with infiltration of the skin. Letten's case of poisoning had itching and round or conical yellow papules which lasted a week.

General scarlatiniform eruptions, followed by desquamations, are less frequent. The oral and pharyngeal mucous membrane is also red, increasing the liability of its being mistaken for scarlatina, as a rise of two or three degrees of temperature is not uncommon. The Chloral Committee of the Clinical Society * had the following skin lesions reported to them: A defective circulation of the hands, with blueness, and, in one case, a line of ulceration round each nail; a bullous eruption called pompholyx; an erysipelatous redness of the face; intense redness and flushing of the face and scalp; a large patch of papular efflorescence of a purplish-red color; a lichenoid eruption and ulcers; and itching of the legs without eruption. In nearly all these cases the drug had been taken for some time, often in large doses. Stimulants are said to increase the eruption. In a case of Kirn's the eruption began as discrete red papules, which became confluent; and as the drug was not stopped, it went on to vesicles, pustules, and scaling of an eczematous type, at first, and then diffuse desquamation, shedding of all the nails, axillary abscesses, and a continuous rise of temperature reaching to 106° F. The same author and Crichton Browne record purpura and petechiæ following its prolonged use, in one case leading to death; and deep ulcer and vesication over points of pressure has been observed by Reimer. Involvement of the oral mucous membrane, tongue, and conjunctiva has been recorded from congestion to blistering and ulceration.

Urticaria has also been met with by Gaucher, Chapman, etc., of course, with itching and burning. According to Barbilion, any form of alcohol given with it, especially in children, greatly increases the liability to eruptions. It has been said that neurotic subjects are more sensitive to it, but they are just the people who take it most.

Chloralamid. Pye-Smith † had a case of a brewer's cellar-

* *Clin. Soc. Trans.*, vol. xiii. p. 121.

† *Ibid.*, vol. xxiii. (1890), p. 137, with colored plate.

man, with aortic disease, who took two forty-grain doses every night for twelve nights. On the thirteenth day a diffuse, bright red scarlatiniform eruption appeared on the face and soon became universal, including the mucous membranes. The temperature reached 103° F., and there were other febrile symptoms, with running at the nose and eyes. The eruption lasted a week, and was followed by large flaky desquamation.

Chlorate of Potassium. Stelwagon * reports a case in which a "fiery erythematous and papular eruption," similar to erythema multiforme, and without subjective symptoms, followed the use of tablets of chlorate of potassium on four occasions, when about one hundred grains in all had been taken. Brouardel and Lhôte noted bluish spots on the skin, sometimes a general cyanosis and sometimes an icteric tint, where poisonous doses of chlorate of potassium had been given.

Chloroform. Morel-Lavallée † records three cases in which purpuric spots were formed under observation during the early stage of administration of chloroform by inhalation.

According to Dudley Buxton, an erythematous eruption may follow both chloroform and ether, beginning as patches and becoming diffuse on the neck and chest. It only lasts a few minutes. Probably purpuric spots are only an occasional outcome of this erythema.

Cod-liver Oil is said by Lewin to have produced a vesicular eruption, and Farquharson speaks of its causing acne.

Codeia. A widespread erythematous eruption ensued after this drug was given by V. Essen.‡ The first attack was in spots, but on a second occasion a diffuse erythema all over the body followed a dose of 0.2 of a gram, or 3-10 of a grain.

Copaiba produces in many people several forms of eruption, mostly of erythematous type, coming chiefly on the hands, arms, feet, knees, and abdomen. It may follow quickly on the first

* *Amer. Med. Record*, July 21, 1883.
† *Ann. de Derm. et de Syph.*, vol. v. (1884), No. 2, p. 78.
‡ *St. Petersburg med. Wochensch.*, No. 17, 1894.

dose, or only after some quantity has been taken, and may be general or partial in its distribution. It fades rapidly if the drug is stopped, desquamation following only when the eruption is kept up by continued administration. The most common and characteristic rash consists of rose-colored, irregular patches, grouped or discrete, and only just perceptibly raised above the surface. In a case of my own the rash was exactly like scarlatina, extending only down to the groins, while on the thumbs and forearms there were small vesicles or papules becoming vesicular. The eruption came out after taking six copaiba capsules in two days, and a fortnight later the same quantity had the same effect, but with the eruption even worse than before. Professor Neumann excised a part of the skin in such a case, and examined it microscopically. The papillary layer was normal, and the affection had its seat chiefly around the blood-vessels, the sebaceous glands, hair follicles, and sudoriparous glands, just in the same way as in measles.

Urticaria and a miliary papular eruption have been observed, and Hardy describes a case where the first administration produced rose-colored, elevated patches, and when again given after an interval, and taken for twelve days, a pemphigoid eruption ensued, with abundant secretion and desquamation, lasting six weeks, and resembling pemphigus foliaceus; anasarca, without albuminuria, was also present. Sequeira * reports a case which began with erythematous patches, and in a few hours large bullæ appeared on the legs; eight capsules only had been taken. Copaiba imparts to the skin secretions a peculiarly disagreeable odor.

Cubebs. One case is reported by Bérenguier, where an electuary produced a general millet-sized, papular erythema, which coalesced into small patches in some places. It lasted two days, and was followed by desquamation.

A combination of copaiba and cubebs, in a case of Mauriac's, led to a scarlatiniform and morbilliform eruption, succeeded by a central ecchymotic patch inclosed in two concentric circles, the outer a deep red, the inner pale rose color, the whole slightly raised. The ecchymoses were more marked on the lower limbs.

* *Brit. Med. Jour.*, vol. ii. (1899), p. 1108.

Digitalis. Traube is said by Behrend to have observed in one case a scarlatiniform and in another a papular erythema, after the ingestion of digitalis. Schuchardt also met with a universal papular eruption twice in the same person; and Morrow relates a universal erythematous eruption followed by giant urticarial plaques and a high temperature. Desquamation followed in large flakes, and complete shedding of the hair and nails. Friedheim describes papules of a dull red.

Dulcamara. Erythematous, urticarial, and red scaly eruptions have been observed.

Ergot. Skin phenomena in connection with "ergotism" occur more frequently from eating ergoted rye in bread for long periods than from medicinal ingestion, but Meadows records two cases in which redness and swelling of the face and arm followed the administration of ergot on three occasions. Petechiæ, vesicular, pustular, furuncular eruptions have been observed, and circumscribed gangrene where the peripheral circulation is weakest is well known. Frankenberg, quoted by T. C. Fox, in an endemic outbreak records bullæ, miliaria, eczema, boils, urticaria, and loss of scalp, hair, and nails.

Guarana. Fox quotes Mattegazza as describing urticaria from the use of guarana.

Guaiacum. Murrell * described a miliary erythematous eruption very like a copaiba rash on the arms and legs with intense itching from this drug.

Iodin and Iodids.—The eruptions that may be produced are pustular, vesicular or bullous, purpuric, erythematous, and urticarial; and also anthracoid, sarcoma-like, vegetating, infiltrated plaques.

The pustular eruptions are the most characteristic, and, like the bromid which they closely resemble, are discrete or confluent. The discrete lesions are, as a rule, much smaller than those of bromid; they are often simple pustules without any raised red base, and when they have one, are more acuminate

* *Philadelphia Medical Bulletin*, January, 1891.

than those due to bromid. When confluent, they may be exactly like bromid lesions, and are called anthracoid by Besnier; or they may have clearer contents, tending more in the bullous direction than the bromid form. Confluent cases have been met with by Duhring, Da Costa, myself, and others, but they are much rarer than the corresponding bromid eruptions. There are always discrete lesions as well, in greater or less numbers, and the distribution, like the bromid rash, is chiefly on the face and limbs, especially round hair follicles.

A further development of these confluent eruptions is seen in the so-called vegetating cases, in which an apparently papillomatous condition is developed. This papillomatous appearance is rare in iodid eruptions as compared with those of bromid, in which it may be often seen. It is not a true papilloma structurally, being mainly epithelial growth upwards, and subsides spontaneously, but slowly, if the drug is discontinued. Norman Walker * reports a highly developed case from Unna's clinic, but with a single lesion on the nose. It was scraped away after only four days' observation. Hallopeau and Feulard have each recorded a case where true papillomatous development occurred on the cicatrices of an iodid eruption.

In two cases of Pellizzari, quoted by Morrow, "there were large inflammatory nodular masses varying in size from a nut to a fist, seated in the subcutaneous tissue, accompanied by high fever, and followed by abscesses which left cicatrices."

In Fordyce's case † the lesions became larger than a man's fist, but, unlike Pellizzari's, did not suppurate. These sarcoma-like lesions are possibly only extreme developments of cases like Pelizzari's.

In Hutchinson's case ‡ large red tumors, many of which broke down and ulcerated, appeared all over the body, limbs, and face, and killed the patient. Hutchinson thinks they are true sarcomata.

The photograph § and history of a case were sent to me by

* *Lancet*, March 12, 1892. He gives references to most of the previous cases. His histological examination is in the *Monatsh. f. Derm.*, vol. xiv.

† *Jour. Cut. and Gen.-Ur. Dis.* vol. xiii. (1898), p. 498.

‡ Hutchinson's smaller Atlas, Plates III. and IV.

§ The photograph from which I made the diagnosis is reproduced in Hutchinson's *Archives*, vol. xi., April, 1900, p. 160. Some other inter-

Taylor of Liverpool, in which, in the course of three weeks, a copious crop of nodules of various sizes came out over the face and neck. The epidermis was tightly stretched over the nodules, which were hard and of the same color as the surrounding skin. The outbreak was traced to Clarke's Blood Mixture, a quack medicine well known to contain iodid of potassium.

In a case of Neumann's with advanced Bright's disease the nodules broke down into crateriform ulceration, and post-mortem extensive ulceration of the pyloric region of the stomach was discovered. In the case of a doctor, whom I saw with Colcott Fox, there were red infiltrations, firm to the touch, raised about one-eighth of an inch above the surface, and situated on the back of the hands and wrists; judging by the plate and description it was very similar to the bromid lesion described by Pini.

Vesicular and bullous are much rarer than pustular eruptions. John O'Reilly, and later Bumstead, were the first to call attention to them; Tilbury Fox * described two cases; and Nevins Hyde,† after recording a case, gives the bibliography up to date of this form. Hyde quite correctly stated that there are pseudo-bullous and truly bullous types.

The *pseudo-bullous* is probably the more common form. It begins as papules, and in most of the cases the vesicular or bullous part is seated on a solid base, and the bullous character is more apparent than real. In a case of Duckworth, which looked herpetic, no fluid escaped on puncture; and one of my own, which to the eye was bullous,‡ proved to be solid on puncture, a drop of clear fluid only escaping on pressure. In one of my cases of this form the eruption was limited to the buttocks. Duckworth also observed in one case that, as in the bromid rash, the lesion was seated on scar tissue.

In Lindsay's case, in the Belfast Hospital, after only seven and a half grains, the patient had headache, nausea, severe itching, and an outbreak of bullæ, surrounded by two concentric

esting cases are also there recorded. In one there were elevated soft bluish-red nodules from a pea to an olive in size, with an erythematous blush round them.

* *Clin. Soc. Trans.*, vol xi. p. 40, with colored plate.

† *Amer. Arch. of Derm.*, vol. v. p. 333.

‡ Author's Atlas, Plate XXXVI.

rings, the outer as large as a crown piece; the trunk, upper limbs, and face were thickly covered, while the lower limbs were almost free.

In Hallopeau's case bullæ with purulent thickish contents came out on the mucous membranes of the tongue and conjunctiva as well as on the face and arms; subsequently condylomatous vegetations appeared, and cicatrices with bands were left. He has had another case since.* Taylor also records three cases in which vegetating lesions came on the site of the bullæ.

What Hutchinson † calls **iodid hydroa** is a more distinctly bullous eruption. I had a somewhat similar case, in which bullæ came out thickly over the face and arms, but each had a rather broad red areola, and there was considerable swelling of the face. A very severe case, which hastened the patient's end, is recorded by Morrow;‡ and another case, fatal in eight days after thirty grains of the iodid in divided doses, is recorded by Wolf of Goritz,§ in which there were papules, pustules, and bullæ in the face and all the visible mucous membranes. I saw a well-marked case affecting the face especially, which was sent into hospital as a case of smallpox. In Wolf's, Morrow's, and my cases, there was renal and cardiac disease.

Mayer examined the contents of a bulla and found a little iodin in combination with an alkali, while the urine was free. O. Rosenthal ‖ found increase of eosinophiles, staphylococci, and diplococci, and Sabouraud's micro-bacillus.

Erythematous Eruptions.—Patches may occur on the face, forearms, and chest.

A papular erythema after small doses is recorded by Maïeff of St. Petersburg.

Diffuse erythema has occurred; one case, a woman, æt. fifty, is reported by B. A. Rugg.¶ After taking four grains every

* "Une forme nécrotique bulleuse et végétante d'éruption iodique," Hallopeau et Fouquet, *Annales de Derm.*, vol. ii. (1901), p. 541.

† *Syd. Soc. Atlas*, Plate XXXIII.

‡ Morrow, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. iv. (1886), with colored plate.

§ *Berlin klin. Wochensch.*, quoted in *Lancet*, October 23, 1886.

‖ *Archiv f. Derm. u. Syph.*, vol. lvii. (1900), p. 3. Colored and histological plates and numerous references.

¶ *Lancet*, June, 1879.

four hours for some days, large red papules, with a shotty feel, came on the wrists and forearms, and from this a uniform erythema, followed by free desquamation, spread all over the body.

Bérenguier described a scarlatiniform eruption on which small discrete vesicles developed.

Urticaria is also exceptional. Jordan Lloyd had a case in which a dose of three or four grains produced general urticaria in three hours, which was gone by the next day. Taylor of New York showed a case in which the urticaria was limited to the exposed parts, and on the second day clear vesicles came out round the wheals. Pellizzari had several cases with urticaria and papular erythema, phlyctenulæ with purulent contents developing on some of the wheals. Other similar cases are on record.

Of similar nature are the cases of edema following iodids. It may occur in the orbit, or even in the glottis, of which Groenow * collected nine cases. Dyspnea, requiring tracheotomy for its relief, may ensue.

Erythema Nodosum.—Indurations, with or without reddening of the skin over them, or in the latter case very like erythema nodosum, may occur after iodids as well as bromids. In a case sent to me by my colleague, Raymond Johnson, there were subcutaneous oval ill-defined tumors over the ribs, over two inches long, firm, and the skin over them was normal.

An eruption like erythema nodosum is reported by Talamon, but it was on the buttocks, front of the thighs, the calves, and on the back, and there were none of the ensuing ecchymotic discolorations characteristic of erythema nodosum. Pellizzari,† Ricord, and Fischer have also reported similar cases. Other differences are pointed out under Bromid Eruptions.

Purpura has been recorded several times by Silcock, Stephen Mackenzie, C. Fox, E. Vidal, Besnier, Fournier, and others. In Mackenzie's case the child died from it after a single dose of two and a half grains. In Silcock's case the purpura disappeared under arsenic, and returned when that was left off; the limbs were especially affected. Hemoptysis and metrorrhagia have also occurred (Kness). It has been noted in the mouth

* Abs. *Brit. Med. Jour.*, May 10, 1890.

† Abs. *Ann. de Derm. et de Syph.*, vol. vi. (1885), p. 573.

with and without skin purpura. According to Besnier purpura does not occur from iodin itself, only from iodid of potassium. In Arnozan's case bullous lesions with severe general symptoms first appeared, and left papillary growths on the cheeks, and was followed by purpuric patches on the buttocks and legs and urticaria on the fingers.

In Tom Robinson's case, a man of sixty-three, a grain of iodid three times a day produced purpura in a week.

Gangrene has supervened occasionally on other forms of iodid eruption; thus in O'Reilly's case of bullous iodid rash, the parts on which the bullæ had been, sloughed, the entire penis being lost.

Erythema-like lesions sometimes occur, of which I have seen one marked instance.

Iodid of potassium has sometimes aggravated pre-existing eruptions for which it has been unsuitably prescribed. I have several times seen such an aggravation of acne rosacea, the eruption suppurating more freely than usual and extending beyond its usual boundaries. It is a dangerous drug in bullous eruptions.

A case of dermatitis herpetiformis under my colleague, R. W. Parker, was aggravated into a gangrenous condition by its use. Iodid, like bromid eruption, has occurred in suckling infants whose mothers were taking the drug.

Thin examined a bullous iodid eruption in a case under Howard Marsh. The sebaceous glands were unaffected, but the vessels were diseased and plugged with disorganized blood. The bulla, he considers, is due to an injury to the walls of a blood-vessel at a limited spot, which allows of the escape of blood constituents; when the injury is slight, iodin acne is produced; when more severe, bullous and pustular eruptions, and in the worst form, hemorrhagic extravasations.

Vincent Harris* also examined a pustular eruption in one of Duckworth's cases, and regarded it as a localized superficial dermatitis, in which the hair follicles and sweat glands were unaffected; the vessels were numerous, dilated, and sheathed with exudation corpuscles; the effusion was greatest in the papillary layer, which was flattened out and excavated.

I have also examined a small lesion from an extensive pseudo-bullous eruption (my Atlas case). While Harris' observations are true in the main the hair follicles do not always escape, as the woodcut clearly demonstrates, and as may often be seen during life; at the same time,

* *Path. Trans.*, vol. xxx. (1879), p. 476.

neither they nor any other structure are essential to the process, which is mainly in the papillary layer. The lesion is a solid one; there is no vesiculation in the rete, as the clinical appearances suggested.

Leredde and Pini found numerous eosinophile cells; they are not only in the deeper parts of the infiltrated area, but also in the rete Malpighii, and epidermis (Rosenthal *). Rosenthal also noted extravasation of blood.

Fig. 27.—An iodid eruption which looked like a vesicle, but proved to be solid, consisting of enormous cell effusion in the papillary layer with a hair follicle in the center, and the sebaceous gland unaffected.

Iodid and bromid eruptions, especially the severer forms, are very liable to occur where there is any renal inadequacy, whether that is due to disease of the kidney itself, or to a weakly acting heart. This helps to explain the circumstance that iodid eruptions often do not come out until the drug has been stopped for some days, or even two weeks. Iodid of potassium is a powerful diuretic, and as long as diuresis is kept up, unless the dose is

* *Archiv f. Derm. u. Syph.*, vol. lvii. (1901), p. 7, Plate III.

very large, there is often no eruption, but when the drug is stopped, after a few days the diuresis stops, and the iodin, not being removed fast enough, excites an eruption.

Diagnosis.—This is much the same as for the bromid rashes, but the lesions are more frequently partially bullous. The discrete pustules are smaller than those of bromid or ordinary acne, and are often simple pustules, with a red areola, but no induration.

Treatment.—The same as for bromid eruptions, with the addition of diluents, such as barley water, freely administered.

Iodoform. Iodoform is rarely given internally,* but when absorbed from wounds or other surfaces, eruptions and serious general symptoms have occurred. Jadassohn, from his own observations, believes that in all cases the drug must also come into contact with the sound skin; and even in Raynaud's and Herzfeld's cases, where absorption apparently occurred by the vagina and urethra respectively, suggests that the skin may have received some of the drug; he cites three cases in which a mucous membrane was immune to iodoform, while the skin reacted. Eruptions from its directly irritant action on the sound skin are far more frequent, chiefly in persons who have a special idosyncrasy towards the drug, which may be congenital or acquired.

The eruptions from absorption are erythematous, urticarial, or purpuric. The erythematous may be diffuse and bright red (Zeissl) or finely papular. In a case of iodoform absorption under Marcus Beck,† a punctiform rash was observed on the arms, knees, and dorsal surface of the feet. Janovsky of Prague also reported a case at the Copenhagen Congress. Treves ‡ reports a case in a child, in the form of closely packed minute papules on an erythematous base from half to one inch across. It was interesting because it developed three days after the subsidence of a local irritant dermatitis from the application of iodoform to a wound. Hoepfl has only observed small red spots over the whole body from its application to a wound.

* Zeissl gave it in a considerable number of cases, but never saw a rash from it.

† *Brit. Med. Jour.*, June 17, 1882.

‡ *Practitioner*, vol. xxxvii., No. 4, October, 1886, with bibliography.

Zeissl had a case with urticaria nodules following the application of iodoform pencils to a sinus.

Purpura has been observed by Jennings, Janovsky, R. W. Taylor, and others. In Jennings' * case grain doses in capsule had been given. That serious general symptoms of nocturnal delirium, elevation of temperature, drowsiness, and progressive emaciation, or even simulated meningitis, may follow from its absorption is well known. Death has occurred in some cases.

The eruptions due to the local irritant action of iodoform may be in the form of diffuse erythema with edema, resembling erysipelas sometimes, or it may go on to a violent vesicular or bullous eruption, but more frequently presenting an eczematous appearance. Neisser describes eight cases of eczematous eruption following its use, commencing with deep redness with severe itching and burning, followed by the development of vesicles. Like other forms of irritant dermatitis, the eruption is not always limited to the site of immediate application, and especially is this the case in surgeons, who, having once suffered from it, show an increased susceptibility to it, until at last even the smell is sufficient to excite an eruption, as in Koster-Sykes' own personal experience. Handling iodoform gauze has produced violent vesicular dermatitis repeatedly, as Hancocke Wathen † records. A number of cases are reproduced in Fox's note to Morrow's article. These eruptions are often not distinguishable from a vesicular eczema, but the more violent the inflammation the more likely is it to be due to an irritant.

Lactophenine. Large erythematous plaques on the face, with swelling of the upper lip and a pea-sized bulla and small blood-stained ulcerations on its inner surface, preceded by heat and pricking of the head, and later intense headache, shivering, and fever. These were the symptoms observed by A. Haber ‡ in a woman of fifty, who took twelve grains in a day.

Mercury. Although it was denied by Hebra, it must be ad-

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vi. (1888), p. 175. See also R. W. Taylor, *New York Med. Jour.*, October 1, 1887; Meunier, "Thèse de Paris," 1889; and M. L. Raynaud, *Annales de Derm.*, vol. vi. (1895), p. 227.

† *Brit. Jour. Derm.*, vol. x. (1898), p 95.

‡ *Correspondenz Blatt f. schweizer Aerzte*, vol. for 1897, p. 742.

mitted, on the authority of Fournier * and Hallopeau, Engelmann, and others, to say nothing of older writers like Alley, that erythematous eruptions may arise from its internal administration, while the so-called mercurial eczema from its inunction is well known, and is of the same character as that due to any other irritant, but with a great tendency to generalize.

Universal exfoliative dermatitis from mercurial inunction has already been alluded to under Dermatitis, and it has also occurred after a sublimate dressing (Eudlitz). Exfoliation of nearly the whole of the horny layer without erythema has also occurred (S. Taylor). The eruption from ingestion may be partial or general, is diffuse, deep red, accompanied by swelling, and may easily be mistaken for erysipelas, especially as it begins in the face, and the surface is smooth, shining, and itchy. It may extend over more or less of the body. It may be papular or scarlatiniform, as in the case of Robinson of Constantinople, and in Hallopeau's case a single dose internally or externally produced a scarlatiniform rash, followed in two weeks by abundant desquamation: after two and a half grains of calomel, miliary vesicles followed, which developed into pustules. In Ramally's case it followed two mercurial inunctions, while no rash followed an injection of mercurial oil; in Lessing's case general scarlatiniform erythema ensued on a hypodermic injection of calomel; hypodermic injections of yellow oxid of mercury (Petersen), and thymol mercury have also been followed by erythematous eruptions; but Janovsky found that injecting pure paraffin oil produced the same rash as the thymol mercury in the same patient.

Guelpa met with a papular eruption on the face and limbs from using a vaginal douche of a half per cent. solution of corrosive sublimate. Petrini had a case of bullous eruption in a woman of twenty-two after an intra-uterine injection of the perchlorid. She was intolerant of mercury in any form. In Mouflier's case it followed vigorous mercurial and belladonna frictions. In Blanchon's case a general roseolous eruption followed exposure to the fumes of mercurial vapor. Therefore the evidence goes

*See also L. de Saint-Germain, two cases, *Ann. de Derm. et de Syph.*, vol. i. (1890), p. 657. There is a good abs. of Morel-Lavallée's paper in *Brit. Jour. Derm.*, vol. iii. (1891), p. 395. Also Berlin Inter. Cong. Jadassohn's paper, *loc. cit.*, gives many interesting cases.

to prove that in the case of mercury these eruptions may follow in certain people whatever may the mode * in which the drug enters the body. This is corroborated by a case of Bürtzeff,† in which a papular eruption followed an inunction, a hypodermic injection, and a single dose internally, the mercurial preparation being different each time. General symptoms of mercurialization may or may not be present. The above do not exhaust the possibilities of the form the eruption may take; urticaria, purpuric, and ulcerative eruptions occur.

Morphia. A bright erythematous eruption, attended with severe itching and pricking, has followed the ingestion of morphia or opium, in many instances. Cases have been reported by Ringer, Farquharson, C. Fox, and others. As a rule it is papular, and resembles measles, but the papules vary in size, and sometimes the eruption is scarlatiniform, or the minute papules may be crowned with minute vesicles. Steinboehmer records a vesicular eruption, and Kirn ‡ describes even small bullæ with intense itching of the perineum and scrotum after a suppository; Möbius from the same cause saw general erythema and urticaria. Multiple ulcerations occurred in Surroville's case. Trousseau considers the sweat orifices to be the site of the lesions. Very free desquamation of the whole area often ensues.

These eruptions are much more frequent after ingestion of the drug than after hypodermic injections, but a scarlatiniform eruption was produced by a hypodermic injection by Comanos. Inflammation, urticaria, pustules, and abscesses at or near the site of injection are not rare, and are probably due to the nozzle not having been made aseptic before use, or from the acid used to dissolve the morphia. Opium and laudanum eruptions are of similar characters when produced by taking the drug, but opium is also a local irritant to some. In a morphinomaniac injector § there was intense irritation of the skin, and indurated scaly patches developed where the scratching was most severe.

* On the other hand, several cases like Ramally's are known, in which inunction produced a rash, while none ensued when given by the mouth, and in another subcutaneous injection produced no rash, although inunction had done so. See Jadassohn, *loc. cit.*

† Bürtzeff. Abs. in *Brit. Jour. Derm.*, vol. iii. (1891), p 396.

‡ *Wien. med Presse*, No. 18, 1883.

§ Private Notes, J., p. 692.

Phenacetin. Valentin * reports a case where fifteen grains produced in two hours flushing, and next day a general acuminate and flatly papular erythematous rash, most marked on the limbs.

Phenyl hydroxylamin.† A student spilt an alcoholic solution of this drug on his clothing, over the abdomen and thighs; in a few minutes he became comatose and pulseless. The lips and mucous membrane of the mouth were gray-blue, the skin of the extremities intensely blue, while other parts looked cadaverous. There were also reddish-brown spots which did not disappear on pressure, on the hands, thighs, and abdomen. Blood when drawn off was chocolate brown, due to the hemoglobin having been converted into methemoglobin. Nitro-benzole poisoning produces similar effects. Drawing off some of the blood and intravenous injection of a liter of 3 per cent. chlorid of potassium, followed by .4 bicarbonate of potassium, saved his life.

Phosphoric Acid. Hasse records the occurrence in a girl of a bullous eruption like pemphigus from this drug. The eruption disappeared when the medicine was stopped, and recurred when it was resumed. Phosphorus has produced purpura, but only in a poisonous dose.

Quinine.— The eruptions due to quinine, and occasionally to other cinchona preparations, are multiform in character, and vary much in severity. They are rather rare, considering how frequently the drug is administered. An eczematous eruption is not infrequent among the workmen in quinine factories, apparently due to external contact. Morrow analyzed 60 cases from internal administration, and found 38 erythematous, 12 urticarial, 5 purpuric, 2 vesicular and bullous eruptions. Erythemato-bullous and other lesions are on record. They are more frequent in women, but the only cause assignable is idiosyncrasy, for although more common where the dose has been large or frequently repeated, a single dose of a grain or a grain and a

* Valentin, *Therap. Monatsh.*, July, 1888, p. 330.

† Hirsch and Edel, *Deutsch. medicin. Wochensch.*, October 14, 1895 Abs. in *Lancet*, November 16, 1895, p. 1261.

half has several times been sufficient to produce a rash, and in one, half a grain produced an erysipelatous rash on one side of the face, which lasted twelve hours (W. Newman), while Burney Yeo * experienced an extensive erythema on the legs four hours after a single dose of a quarter of a grain.

In C. W. Allen's † case the idiosyncrasy was acquired, and here also a quarter of a grain would excite an eruption, while by varying the dose the eruption, "primarily erythematous, became urticarial, edematous, bullous, covered with small vesicles or converted into an excoriated patch." Moreover, he could produce an eruption whether the drug was given by the mouth or rectum, subcutaneously, or by ointments, or by the patient holding the drug in the mouth for a few minutes.

Stelwagon's ‡ case at present holds the record, the patient had had a score of attacks; 1-16 of a grain by the mouth, a dentrifice containing a small proportion of calisaya bark, and a quinine hair-wash were all equally efficacious in producing, in a few minutes, a hot flush over the whole body, soon followed by a copious and universal scarlatiniform eruption, and this again by desquamation.

The erythematous form varies. As a rule, it is a scarlatiniform efflorescence, beginning on the face and neck, and spreading all over; or it may be partial, but symmetrical in its distribution. Sometimes the lesion is more distinctly papular, the papules being minute and acuminate or convex and morbilliform; even when more distinctly urticarial the wheals are more often pink than white. All these forms are attended with severe itching and pricking, and may be preceded and accompanied by considerable constitutional disturbance, nausea, vomiting, a rise of temperature even up to 102° F., and a pulse of 130 or 140. In one case there was severe dyspnea with large wheals (Floyer). The general erythematous eruptions are, unless transitory, followed by desquamation, which may be very copious, casts of the hands and feet being thrown off, and sometimes the exfoliation persists for several weeks or even two months (Köbner).§

* *Brit. Med. Jour.*, March 16, 1889.

† *N. Y. Medical Record*, January 26, 1895.

‡ Stelwagon, *Amer. Jour. Cut. Dis.*, vol. xx. (1902), p. 13.

§ An extreme case is recorded with illustrations by Lanz of Moscow in the *Monatsh.*, vol. xvi. p. 309.

Some think that desquamation may be produced without antecedent eruption, but this is highly improbable. In Neumann's case the desquamation after the efflorescence lasted several weeks, and many abscesses and furuncles ensued.

In a case of Nunn of Savannah the erythema was in bright red patches, one inch in diameter, and almost unilateral, occupying the left side of the nose, cheek, and chin, flexure of left wrist, back of hand, and knuckles of fourth and fifth fingers; and in another case it was on the palms and face. In Ruyssen's case the patches were only on the extensor aspect of the limbs, very variable in size and shape, and mingled with them were small papules.

In several cases severe inflammation about the genitalia has occurred. In Schuppert's case, after six-grain doses, intense inflammation, with commencing gangrene of the scrotum, ensued. In Briquet's case an ecchymotic patch on the buttocks became gangrenous; and in Köbner's case there was an erysipelatous eruption of the scrotum. Purpura of the usual characters has followed quite moderate doses; a grain and a half taken for four days produced it in Gaudet's case.

Vesicular eruptions are less common than any of the above. Heusinger * had a case in which there was a vesicular eruption like herpes, and Panas saw an eruption like the bullæ of pemphigus after large doses. It may also be vesiculo-pustular.

In Hagan's † case a child of four and a half suffered from an erythematous eruption for three years without the cause being suspected, the mother having been in the habit of dosing the child with quinine to prevent its taking cold.

The diagnosis can only be made from similar eruptions due to other causes, by knowing that the patient has taken quinine, and excluding other factors; in many cases there is a history of previous attacks under similar circumstances. From *scarlatina*, the constitutional symptoms will generally assist in the differentiation, and there is often in the erythema a sharp line of demarcation from the normal skin contrasting with it, while that of scarlatina is never defined at the border.

The treatment is simple and effectual. Withdraw the drug, and use locally soothing astringent lotions, such as calamin or

* Quoted by Bergeron and Proust.

† *New York Med. Jour.*, March 28, 1891.

subacetate of lead; the addition of liq. carbonis detergens, ♏x to the ʒj, assists in allaying the itching. Sometimes a saline purgative may be given with advantage.

Resin. "About as much as two walnuts" produced in a woman swelling of the face, followed by an urticaria, with small wheals on the chest and arms (Jacob).*

Rhubarb. Litten † met with a case of severe hemorrhagic and pustulo-bullous eruptions from ʒiij of infusion of rhubarb with bicarbonate of soda. Goldenberg had also a case with purulent bullæ. In Kütur's case there was a "general desquamative recurrent scarlatiniform eruption both from rhubarb and from ipecacuanha."

Salicylic Acid, its salts and derivatives, salicin, salipyrin, salol, etc., produce eruptions in a rather large proportion of cases, the salicylate of soda being the most frequent offender, partly, but not entirely, because it is more frequently given than the rest. These drugs act primarily on the vaso-motor centers, and the eruptions may be scarlatiniform, morbilliform, or urticarial, less frequently vesicular, bullous, or purpuric. A rise of temperature,‡ sweating, and edema are frequent concomitant vaso-motor phenomena.

Salicylate of Soda. Erythematous eruptions following the ingestion of this drug have been so frequently recorded that special references are unnecessary in the majority of cases. They are scarlatiniform in character, and may thus give rise to some difficulty in diagnosis, especially when the mucous membranes are affected, but they would not develop exactly like scarlatina, as they may commence in any part of the body, and often the rash is not uniform in its characters. Morbilliform, patchy, and diffuse erythema, often with much edema, are less common. Urticaria is not very common. A very severe case is recorded by Shepherd § of Montreal. A man with supposed

* Jacob, *Med. Press and Circ.*, March 3, 1880.
† Supplement, *Brit. Med. Jour.*, May 21, 1891.
‡ A temperature of 107° F. is recorded by Barron, *Lancet*, May 31, 1890.
§ *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xiv. (1896), p. 16.

acute rheumatism, after taking three twenty-grain doses, developed an urticaria beginning on the lower extremities, becoming general by successive crops, involving even the mucous membranes. The wheals soon became hemorrhagic, and many of them sloughed, leaving slowly healing ulcers. Blebs also appeared on some of the lesions.

Bullous eruptions have been observed several times. Rosenberg * records a bullous eruption which ensued several times after the administration of the soda salt, and was kept up as long as there was any salicylic acid in the urine. A case of extensive pemphigus in acute rheumatism in a boy of sixteen, reported by Bayliss,† was probably due to the salicylate of soda. A circinate erythemato-vesicular eruption, apparently like a dermatitis herpetiformis, was experimentally proved to be due to this drug by E. Beier.‡

Salicin produces eruptions usually erythematous, like those from salicylate of soda, but far less frequently.

Salicylic Acid. Heinlein § observed a case in which, when the dose was raised to gr. 60, itching and tingling of the skin were produced, followed by diffuse redness of the left side of the face, the right side of the chest, and both lower limbs, with slight edema of the eyelids, upper lip, and lower limbs, and a rise of temperature to 101.8° F. and a pulse of 90. After an interval the same dose was repeated; in a quarter of an hour severe burning pain was felt, and in half an hour severe general urticaria ensued, but was gone by the next day. Small doses could be taken with impunity.

In Wheeler's ‖ case there were vesicles and pustules on the hands and feet, with much sweating, which ceased when the drug was stopped. Freudenberg ¶ observed large petechiæ and vibices, followed in a week by profuse desquamation. The repetition of the drug after an interval produced the same result.

* *Deutsch. med. Wochensch.*, 1886, No. 33.

† *Lancet*, August 19, 1893. Other cases are quoted in Neale's "Digest," and Morrow's "Drug Erup.," p. 410, *Syd. Soc.* Ed.

‡ *Archiv f. Derm. u. Syph*, vol. xxviii. (1894), p. 125.

§ *Rundschau*, Bd. 19 (1878), Heft. 10. Urticaria is also recorded in *Practitioner* for February, 1879.

‖ *Boston Med. and Surg. Jour.*, October 17, 1878.

¶ *Allg. med. central Zeitung*, October 26, 1878.

Salipyrin.* In a man of sixty-six with old nephritis, after four fifteen-grain doses an infiltrated red edema of the scrotum was produced. The repetition of the drug led to necrosis of the affected areas. A. Bruck † observed in himself an eruption after a single gram dose. The characters of the rash were those of antipyrin, to which the author had previously shown himself to be hypersensitive; on the glans penis the rash was vesicular.

Salol. Demme ‡ observed urticaria in a child after its internal use, but such an occurrence is quite exceptional. Violent dermatitis has ensued from its topical use (Morel-Lavallée).

Santonin. Urticaria developed in a child shortly after taking three grains of the drug for supposed worms. It subsided in a couple of hours, after a warm bath (Sieveking.). §

Silver Nitrate. Long-continued administration is well known to produce slate-colored pigmentation (see Argyria).

Stramonium produced an erythematous eruption in a case of Deschamps. ‖

Strychnia. A quarter of a grain of quinine three times a day having produced after the second dose a scarlatiniform rash, 1-24 of a grain of strychnia was given instead, and the same kind of rash appeared (Skinner ¶). Diefbach accuses strychnia of producing pruritus and miliaria.

Sulphonal. Leloir describes a diffuse erythematous and macular eruption like a syphilitic roseola, chiefly on the trunk. Schotten and Engelmann report a diffuse scarlet eruption, one on the thighs, the other on the breasts; while Bresslauer has seen purpuric patches on the limbs. The urine after toxic doses is brownish-red, due to the presence of hemato-porphyrin. Wolters reports two cases, one with a scarlatiniform, the other with a vesicular eruption.

* F. Schmey, *Ther. Monatsch.*, 1897, Heft. 3, p. 175.
† A. Bruck. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 196.
‡ *Brit. Med. Jour.*, Paris corr. December 22, 1888.
§ *Brit. Med. Jour.*, February 18, 1871.
‖ *Gazette des Hôpitaux*, 1878, No. 124.
¶ *Brit. Med. Jour.*, January 29, 1870.

I know of a patient who has taken the drug nightly for fifteen years without ill effect.

Tannin.* General urticaria followed the topical application of a one to fifteen solution of tannin to the pharynx in a case under the care of Lange of Copenhagen.

Tar. When absorption occurs from its vigorous inunction over a large surface, shivering, fever, nausea, vomiting, and diarrhea may ensue, with olive-green urine, black vomit and feces. On the skin itself tar may also act injuriously; in some people a very moderate external use will produce swelling, redness, heat, and pain, and sometimes itching; vesicles and bullæ may form; also "tar acne," or inflammation of the hair follicles or sebaceous glands, from plugging of the orifice, producing papules or nodules with a black central spot; in a few case these papules break down and ulcerate. The application of the tar must be stopped at once on the occurrence of such symptoms, and free diuresis, produced by copious draughts of barley water, will often prevent or soon remove them.

Waldeck † records that an erythematous eruption occurred in a patient who was taking Guyot's tar capsules. Carbolic acid absorption from a Lister's dressing produced an "erythema urticatum" in one case (Zeissl).

Terebene. O. H. Garland ‡ reports that after six five-minim doses a profuse, bright red, intensely itching, papular rash was produced, first on the left hand, with much swelling, and then on both ankles, extending on the legs up to the knees. In the same patient, thirty years previously, a turpentine liniment produced a similar rash, with much swelling of the arm. Lascelles Scott experienced a similar rash, but ascribed it to the impurity of the terebene.

Toxin or Serum Eruptions. The subcutaneous injection of various toxins or anti-toxins, such as tuberculin, diphtheritic, anti-streptococcic serums, and others, is not infrequently at-

* *Brit. Med. Jour.*, May 10, 1890, from *Deutsch. med. Wochensch.*, January 2, 1890.

† *Deutsch. med. Wochensch.*, iv., 1879, No. 9.

‡ *Lancet*, May 22, 1886.

tended with the development of erythematous eruptions, scarlatiniform, morbilliform, patchy, or diffuse. Urticaria is also frequent. As a rule, these eruptions, to which only a certain number of people are liable, recur after each injection, but not always in the same form. There is little or no itching, but there may be desquamation. There is nothing distinctive about these rashes. The form, and indeed the very occurrence, depends on the idiosyncrasy of the individual, so that the vaso-motor centers are abnormally easily affected by these toxins, and the diagnosis is only made by the knowledge that a toxin has been injected. According to Dubreuilh, the serum of the horse is liable of itself to produce an eruption, and he suggests that other animals should be selected for anti-diphtheritic serum.

Turpentine has been followed by an erythematous redness, chiefly of the face and upper part of the body, minute papules, and sometimes vesicles, with intense itching, developing in some cases. In one case minute acuminate papules, like shagreen, with violent itching, extended all over the body, the itching continuing after the rash had gone. In another a bright red morbilliform eruption was produced by a teaspoonful of turpentine given to a child with diphtheritic croup. Feibes reports a conical papular eruption due to it.

The forms of eruption and the drugs that produce each are placed together in the following enumeration:

Erythema. Arsenic, antipyrin, belladonna, benzoate of soda, boric acid, borax, bromin, cantharides, capsicum, chinolin, chlorate of potash, chloral hydrate, chloralamid, chlorate of potassium, chrysarobin, codeia, copaiba, cubebs, digitalis, dulcamara, guiacum, iodin, iodoform, lactophenine, mercury, morphia, phenacetin, quinine, salicylic acid, stramonium, strychnia, sulphonal, tar, tartarus boraxatus, terebene, toxins, turpentine.

Vesicular. Antipyrin, arsenic, cannabis indica, chloral, cod-liver oil, copaiba, iodin, morphia, quinine, salicylic acid, sulphonal, turpentine.

Bullous. Antipyrin, bromin (one case), cannabis indica, copaiba, chloral, iodin, mercury, morphia, phosphoric acid, quinine, rhubarb, salicylates.

Urticarial. Antipyrin, arsenic, bromin, copaiba, dulcamara, guarana, iodin, iodoform, quinine, resin, salicylates, santonin.

Pustular. Arsenic, bromin (confluent), chloral, iodin (isolated), salicylic acid.

Purpuric. Antipyrin, arsenic, chloral hydrate, chloroform inhalation (early stage), ergot, iodids, idoform, quinine, salicylic acid, sulphonal.

Pityriasis Rubra. Bichromate of potash, mercury.

Psoriasis (?). Borax, bichromate of potash.

Eczema. Bromin (Voisin), borax, chrysarobin, bicarbonate of potash, iodoform.

Gangrene. Arsenic, ergot, iodid, quinine (one case).

Keratosis. Arsenic.

Persistent Desquamation. Quinine.

Abscess. Quinine.

Furuncles. Arsenic, bromin, quinine.

Anthracoid. Bromin, iodin.

Ecthyma. Bromin.

Zoster. Arsenic.

Cyanosis. Antifebrin, exalgin, monobrom-acetanilid, phenylhydroxylamin.

Pigmentation. Arsenic, nitrate of silver, picric acid.

Sarcoma-like. Iodin.

On reviewing these various drug eruptions, the number which produces some sort of erythema is very striking. Excluding those which, like nitrate of silver, merely produce discoloration, there are forty-eight; out of these, thirty-seven produce erythema, and of the other eleven, three excite urticaria and four vesicular or bullous eruptions.

The presumption is in favor of all these exanthematous rashes being due to a vaso-motor neurosis, either from reflex irritation, or direct action on the vaso-motor centers, or perhaps in some cases, as Jadassohn thinks, on the peripheral nerve-ends. Behrend's ingenious view, that those drugs which did not produce special eruptions (such as bromin and iodin, which he calls dynamic eruptions) produced toxins in the body, has no facts, only analogies, to support it, and is unnecessary, as the theory of nerve influence is more probable and is sufficient to account for them. Brooke supported this view in a well-argued paper, with which I agree. On the other hand, I cannot accept Fox's view, that the eruptions produced by the external application of drugs is of the same nature as those from the inside, except so far as they may be classed with all irritants, which in predisposed persons will excite a widespread dermatitis from a local irritation. There are certain drugs about which there must be some reservation. They are belladonna, iodoform, and mercury, and in rare cases morphia and quinine, whether introduced into the body by the mouth, mucous membranes, or skin; the result is in certain people to produce an erythematous rash. Belladonna does so, probably by its direct effect on the vaso-motor nerves, while it is unknown how the others act. The more special action of iodin and bromin has already been discussed.

ANIMAL POISONS.

Besides the directly irritating effects from the bites or stings of insects and contact with certain of the lower animals, there remain certain animal poisons, which usually gain an entrance into the body by inoculation through some abrasion, pricks, or other trifling lesion, and are liable to set up inflammation, sometimes of a phlegmonous character; the severity of the effect depending largely upon the special character of the poison and the susceptibility of the patient. These poisons may be specific, like those of splenic fever or glanders, or non-specific, as in dissection wounds. They are all doubtless of bacterial or micrococcal origin, though they have not all been identified. As the skin manifestations are the least important part of the disease in many cases, they can only be briefly considered here.

DISSECTION WOUNDS.

The inoculation of the virus derived from the dead bodies of men and animals gives rise to various troubles, local and general, or both, and of trifling or grave importance according to the period of the decomposition of the body, the cause of death, and the state of health of the recipient of the poison. Of the nature of the virus we know little; it probably varies in its qualities, and is generally, if not always, of bacterial origin. It is most virulent in fresh bodies, and in those who have died of septic diseases. The poison gains entrance into the body through some trifling defect in the skin, such as a chap, prick, or abrasion.

In rare instances acute and rapidly fatal septicemia may arise, without local changes at the site of inoculation; while if pyemia supervenes, it is always secondary to other lesions.

The brunt of the local effects falls upon the cellular tissue, the lymphatics, or the skin; in the last, the symptoms being almost always purely local, while in the first they are often serious, and even fatal. When the cellular tissue is chiefly involved, diffuse cellulitis sets in, with brawny swelling of the tissues, starting and spreading rapidly from the point of inoculation. In some instances so severe is the inflammation as to produce spreading gangrene; and the general symptoms are serious in proportion to the extent and severity of the inflammation. Lymphatic inflammation may attack either the vessels, or the glands, or both, with or without marked signs of inflammation at the site of inoculation; here again the general symptoms may be slight or severe.*

The skin lesions are ordinarily boils, whitlows, onychia, or pustular folliculitis at the back of the hand. These present nothing special in their form or treatment.

There remain two more characteristic lesions—the Post-mortem Pustule and Wart, or Verruca Necrogenica, which is described under Lupus Verrucosus, from which it differs only in its etiology.

*For more detailed information, see Holmes' "System of Surgery," or similar work: or the article on "Post-mortem Wounds," by Marcus Beck in Quain's "Dictionary."

The Post-mortem Pustule starts from some prick or abrasion, which becomes hot, red, and itching by the next day, and in another twenty-four hours a pustule is formed, with pain and tenderness, relieved when the pustule is pricked; but pus again forms under the scab, with repetition of the symptoms, and this may happen again and again, each time the lesion becoming larger, unless suitable treatment is employed. Occasionally there is sympathetic inflammation of the glands and lymphatics, and slight constitutional disturbance.

Treatment.—Open the pustule, drop in a little iodoform, and keep it moist with wet boric lint under oiled silk until it has quite healed.

Erythema Serpens. This is a septic, but not a serious erysipelatoid erythema, first described by Morrant Baker,* who met with many cases in the butchers from Smithfield meat-market.

It follows on a scratch, *e. g.*, from meat bone, or while dressing meat or game, and less often after other trivial injuries not so obviously open to animal toxins. From a few days to a week or two after inoculation a pink inflammatory blush appears of a patchy character, with borders fading into the healthy skin; others develop and group into an enlarging circle, so that they become more separate. They affect the knuckles and both surfaces of the fingers, and although there is very little swelling, movement is much impaired and great pain is complained of, tingling, burning, or shooting in character, seldom extending beyond the finger and hand. Red lines along the lymphatics and swollen glands are quite exceptional. The patient looks and feels ill out of proportion to the local symptoms, but there are no febrile symptoms of importance.

The disease lasts from two to six weeks, averaging three; it never suppurates, and rarely involves the trunk, lymphatics, or veins. It is readily amenable to hot boric acid fomentations and saline aperients.

Erysipeloid, as described by Rosenbach,† appears to be a

* Morrant Baker, *St. Bart. Hosp. Rep.*, vol. ix. (1873), p. 198, with colored plate.

† Rosenbach, *Verhandlungen der Deutschen Gesellschaft f. Chir.*, April, 1897. Also W. Anderson and Colcott Fox, *Brit. Jour. Derm.*, vol. xi. (1899), p. 121.

closely analogous, if not identical, affection met with in the same class of persons. It is accompanied by pricking and itching about the fingers and hands, extends peripherally while dying away centrally, without desquamation; but, unlike Baker's erythema serpens, it is described as having a sharply defined, slightly elevated, dark violaceous, almost livid red zone round the site of inoculation. It gets well in one to three weeks without treatment. Rosenbach found a coccus which he classed as a cladothrix, as it produced a closely woven mass of fine threads of various lengths on cultivation. By inoculation of pure cultures he reproduced the disease in forty-eight hours.

"Gayle" in man. In the lambing season ewes are liable to a very fatal disease called "gayle," which appears to be a sort of puerperal fever. Men who skin animals which have died of this disease sometimes inoculate their hands. The result is the formation of a pimple, which enlarges into a flat, loculated, and therefore lobulated vesicle with a slightly depressed center, which may be an inch in diameter, and is of a bluish-gray color and with a slight areola. The contents are clear or blood-stained serum. There is no pain or febrile disturbance, but the axillary glands are enlarged and the hand may be swollen. Klein has shown that it is due to a special organism which he called "staphylococcus hæmorrhagicus,"* from its producing hemorrhagic edema when cultures were injected into guinea pigs and sheep. J. McNaught observed two cases in men who had been killing healthy lambs. One of the men had slight pyrexia. It is remarkable that the organism should produce such serious general symptoms in sheep and guinea pigs and only a local affection of a mild kind in man. It shows that it is no ordinary septicemia.

The treatment is to remove the covering of the vesicle and disinfect the surface. Colby used corrosive sublimate. Probably 1 in 2000 would be the best strength.

* "A Coccus Pathogenic to Man and Animals: Staphylococcus Hæmorrhagicus," E. Klein, *Brit. Med. Jour.*, August 4, 1897, p. 385; and McNaught's letter, *loc. cit.*, September 11.

EQUINIA.*

Deriv.—*Equus*, a horse.

Synonyms.—Glanders, Farcy; *Fr.*, Morve; *Ger.*, Rotz.

Definition.—A contagious, specific disease, with general and local symptoms, derived from the horse or ass.

Glanders is fortunately a very rare disease in the human subject. The attempt made by some authors to distinguish between glanders and farcy is not scientifically sound or practical, and it is best to divide it into acute, subacute, and chronic. The acute cases terminate within four weeks, and are almost invariably fatal; the subacute go on to six weeks or so; the chronic may last for months or years, about fifty per cent. recovering.

Symptoms.—The general symptoms set in from three days to three weeks after inoculation, the site of which is not always ascertainable. The early symptoms are vague and indefinite, of the usual febrile characters, among which prostration, constipation, and vague muscular and articular pains, when severe perhaps ascribed to acute rheumatism, are the most distinctive. Later on the pyrexia gets more marked, with severe rigors, profuse sweatings, and diarrhea instead of constipation; the patient sinks into the typhoid state; pyemia, with or without jaundice, may supervene, and he dies exhausted.

The local manifestations affect chiefly, and most distinctively, the mucous membranes, the skin, and the lymphatics.

One of the most characteristic symptoms is a nasal discharge, catarrhal at first, then purulent, and often sanious, but always thick, tenacious, and offensive; the inflammation spreads to the respiratory, oral, and ocular mucous membranes, with corresponding symptoms. This nasal discharge may occur very early, and be very profuse, as in acute glanders, or quite late and moderate, as in some chronic cases, and is due to ulceration of the mucous membrane, which goes down even to the bone, and leads to perforation; it is invariably present at some time or other in acute and subacute, but in not more than half the chronic cases. In an early stage minute gray points may be

* Illustrated in *International Atlas*, Plate XX. Farcin chronique térébrant, E. Besnier.

found in the respiratory passages. These are granulations which break down into ulcers covered with a broken-down yellow *débris* like pus, which is full of bacilli. If the disease has gained entrance through a wound or abrasion, the site of inoculation becomes painful, tense, red, and inflamed, and a spreading ulcer forms, with foul, loose, irregular edges, chancroid aspect, and dirty, sanious, and often offensive discharge. There is swelling and often inflammation of the neighboring lymphatic vessels and glands, and phlegmonous inflammation, with numerous pustules and ulcers, may affect the whole limb or region in which the disease started.

The special and characteristic skin lesions begin deep in the corium. In from two days to three or four weeks they appear on the surface as scattered groups of red spots, which soon become shot-sized papules and change to yellow, and may thus sometimes be mistaken for pustules; but pustules the size of a pea on livid red bases, and rather like variola pustules, are produced if the papules become vesicular or bullous. These may coalesce into irregular superficial ulceration, with dirty sloughy coating, or dry, black, gangrenous patches may form. Infiltrations also occur in the subcutaneous tissues, and break down into large deep sloughs; these skin lesions are not invariably present in all acute cases, the patient sometimes dying before they come out. Besides the lymphatic vessels and glands in the neighborhood of the inoculation, those elsewhere also enlarge and inflame. The nodules thus produced are called in the horse, where they are very numerous and marked, "farcy buds"; these "buds" may either resolve, or more often suppurate in a low form, and break down into foul ulcerating cavities, with indurated and irregular edges and base.

These various lesions, the erythema, phlegmonous processes, pustules, abscesses, and ulcers may affect almost the whole surface, and with the joint troubles fill the patient's cup of misery to the brim.

Etiology.—The disease occurs almost exclusively in those who have to do with horses, and so only in male adults; a very few instances have occurred where it has been conveyed to women and children by the husband and father, who was the first victim. In Elliotson's classical case, a laundress was infected from washing the clothes of a coachman who had died of the disease. The

disease arises, either by direct inoculation of the secretions themselves on a wound, or through the mucous membrane or entire skin; *e. g.*, where the horse has snorted in the victim's face, and so inoculated the eyes, nose, and mouth.

Pathology.—It is due to a specific micro-organism, the bacillus mallei, the size of the tubercle bacillus, culture inoculations invariably reproducing the disease, as was proved by Loeffler and Schütz. Bouchard, Charrin, and others have made similar, but not such conclusive observations.

These bacilli, in film preparations, may be in pairs or single, rarely in threads. The bacillus may be pointed at one end like a note of exclamation without the dot, or both ends may be rounded, or it may be like the italic *f*. It stands irregularly, but best with Loeffler's methylene blue (*vide* Appendix). It produces the toxin called mallein, which when injected into glandered animals produces severe febrile reaction (102° to 104° F.) and a local one accompanied by immense swelling at the site of injection, while it has little or no effect on a healthy animal.

Diagnosis.—When there is no history or evidence of inoculation or contact with glandered animals, this may be difficult until the symptoms of skin, lymphatic, and mucous membrane lesions are declared. There is no difficulty when these sets of symptoms are present. The bacillus may be detected in the yellow detritus which generally covers the ulcers of the mouth, and very often, but not always, in the nasal discharge. Even where the microscope has failed, Strauss' inoculation method has succeeded. When glanders pus is injected into the peritoneal cavity of a male guinea pig swelling of the testicles occurs within twenty-four hours, and a culture of the bacilli may be found between the tunica albuginea and the other tunics of the testicle. According to MacFadyean, agglutination of glanders bacilli by the blood of a glandered horse occurs in the same way as in Widal's reaction in the serum diagnosis of typhoid fever. I am not aware that the mallein test has been used in man, but as it may be useful as a therapeutic measure also, the experiment would be justifiable when the diagnosis could not otherwise be made. Buschke considers it applicable as a test for glanders of internal organs.

Prognosis.—This is always serious, and in proportion to the acuteness of the symptoms.

Treatment.—Nothing has been of any avail in acute cases. In chronic ones also, the treatment hitherto has been on general principles—to keep up the strength of the patient, and to give large doses of quinine, but the success of the anti-diphtheritic serum treatment suggests that similar treatment may be available here also. Stiénon of Brussels tried it in an apparently hopeless case. Mallein was injected, beginning with one milligram, and increasing in the course of sixteen days to thirty milligrams. There was marked improvement in a month, and recovery took place in a few months more. There was no local or general reaction during the febrile period, but during the non-febrile period of convalescence there was some elevation of temperature after injection. Buschke has also used it in chronic glanders; he began with one milligram and increased it to a gram in the course of a week; the patient did not show any local or general reaction and recovered.

PUSTULA MALIGNA.

Synonyms.—Anthrax, Malignant pustule; *Fr.*, Charbon; *Ger.*, Milzbrand.

Definition.—A gangrenous carbuncular lesion, produced by inoculation with virus containing the bacillus anthracis derived from animals suffering from splenic fever.

Splenic fever is a disease of horned cattle, sheep, and horses, which may be communicated to man either by inhaling infective particles or by direct inoculation. The first mode of infection produces internal anthrax, a general and rapidly fatal disease without any skin affection; the second leads to external anthrax or malignant pustule, which is at first a local lesion, from which the general system is soon infected. This second or local variety is the only one which will now be considered.

Being derived from contact with the hides or secretions of diseased animals, the exposed parts, such as the face, neck, and hands, are most commonly attacked. At the site of inoculation there is at first considerable itching and burning, soon followed by the formation of a livid-red papule, on which arises a bulla with serous or bloody contents, or a pustule on an inflammatory areola. The bulla or pustule ruptures, and the dark red spot

beneath dries up into a black, gangrenous eschar a quarter of an inch or more in diameter, bordered by small vesicles or pustules on a hard base, the skin round for a considerable distance is of a dusky red hue, densely infiltrated, the boundary being well defined, and the tissues edematous, or so indurated that it even creaks on section, while the glands and lymphatics of the affected region share in the inflammation. The gangrene may extend sometimes very rapidly and widely, with a speedily fatal issue, sometimes more gradually over a small area; when it is arrested, supposing the patient to survive, the slough separates in a variable time, according to its depth and extent, and healing follows by granulation, as in carbuncle. In exceptional cases a widespread and malignant edema takes the place of the pustule.

The constitutional symptoms vary according to the extent of the gangrene and the surrounding inflammation, and later on, according to the secondary complications. By the time the black eschar has formed, general infection of the system has commenced, and shows itself by rigors, vomiting, swelling of the glands, pyrexia (which may reach 104° F. or more), severe pain in the head and bones; the patient sinks into a typhoid state and dies comatose, perhaps with convulsions, due to meningeal hemorrhage, in thirty or forty hours; or, if the constitutional infection is a little less severe, lung or other complications arise, and occasion death in four to six days—seldom longer. On the other hand, in favorable cases, with suitable treatment, the symptoms gradually subside, the sloughs separate, and recovery slowly takes place.

There is thus (1) a period of incubation of from a few hours to a few weeks, without prodromata; (2) the development of the local primary lesion of papule, vesicle, and pustule, lasting from twelve to twenty-four hours; (3) consecutive brawny infiltration and edema round it, gangrene in the course of the next twenty-four hours, and death in two to eight days, or a protracted recovery.

Etiology.—The disease chiefly affects those who have to do with the hides of diseased animals, such as butchers, slaughterers, tanners, wool-sorters, etc. It is seldom derived directly from the live animals, but flies are sometimes the medium of its conveyance, while the flesh, if imperfectly cooked, and milk or

butter from the diseased animals, have produced it in rare instances.

Pathology.—It is definitely proved that the disease is due to the presence of the bacillus anthracis, a rod-shaped organism 3 μ to 10 μ long, and 1 μ to 1.5 μ in diameter. This grows in the blood and all the tissues, and, after the first day or two, may be found not only in the fluid from the specific pustule, but also in the sweat, sputa, urine, and feces. In the skin it is distributed in the papillary layer, as has been demonstrated by Charlewood Turner,* A. Barker, and others.

Diagnosis.—The occupation of the patient, the position of the lesion, the presence of a gangrenous patch with vesicular border, extensive edema, and induration round it, with the severe constitutional symptoms, leave little doubt of the nature of the affection.

Before the gangrene has declared itself the occupation is often the only clew. Inoculation experiments on animals may be used for confirmation of the diagnosis, though it would not be right to defer treatment for this; a more ready method would be to stain some of the fluid from the pustule, after drying it on a cover glass, and search for the bacilli. (For the method of procedure see Appendix.)

The lesion somewhat resembles a *malignant facial carbuncle*, a *primary chancre of the face*, or a *poisoned wound*, but the rapid progress and gangrene distinguish it from these.

Prognosis.—The mortality of this local form is about 33 per cent., but varies in different outbreaks. The extent of the gangrene, rapidity of its formation, and the constitutional symptoms afford the best data for the immediate results; later on, the presence or absence of complications is the chief guide. The presence of the bacilli in the blood and secretions is a very bad but not absolutely lethal condition.

Treatment.—The good results from early † excision, cutting widely beyond the central lesion, leave no doubt about this being the proper course to pursue. It is not necessary to carry the incision beyond the induration laterally, but vertically it should

* *Med. Chir. Trans.*, vol. lxv., 1882, in Davies-Colley's paper.

† Davies-Colley's paper, *loc. cit.* Case by Morrant-Baker in *Brit. Med. Jour.*, June 14, 1884, with colored lithograph. Clinical lecture on a case of true anthrax, by A. E. Barker, *Clin. Jour.*, June 5, 1895, p. 91.

go well down into the fat. The thrombosis of the vessels prevents there being much bleeding.

The injection of iodin or carbolic acid (5 per cent. solution) under the eschar is a good but less radical and more uncertain measure; thus Buck of Leicester records a case of recovery which was treated in this way, together with the administration of large doses of hyposulphite of soda and large quantities of meat; the good result was probably due to the carbolic acid at the same time. Potëënko cured four cases with 10 per cent. injections of carbolic acid. Three or four Pravaz syringefuls were injected into the swelling once a day, and part was soaked with a 5 per cent. solution in the intervals.

Arnold injects one-half per cent. solution of perchlorid of mercury in a 5 per cent. carbolic solution—one or two syringefuls twice a day. Slesarevsky cut away the hard part of the slough and dusted with pulverized corrosive sublimate. No toxic symptoms occurred in forty-four cases. J. B. Gresswell has had marked success in treating splenic fever in cattle with the sulphite of soda, so that the salt deserves further trial; large doses of quinine, five or ten grains every four hours, are also strongly advocated. An exclusively animal diet is recommended, on the ground that the disease is not communicable to the carnivora; but this is not true for cats and dogs, which die if they eat the uncooked flesh of a diseased animal.

VACCINATION RASHES.*

Vaccination is too often falsely accused of a large proportion of infantile eruptions; at the same time it cannot be altogether acquitted of being the indirect cause of rashes which are not,

* *Literature.*—Illustrated in Author's Atlas. Plate XXXIX. shows Impetigo Contagiosa and so-called "Vaccine Lichen," really a papular erythema; Fig. 2, Plate XLI., shows a more profuse erythema; and Fig. 1, Plate XLII., whilst really a case of varicella gangrænosa, illustrates the kind of gangrene sometimes following vaccination. "Vaccinal Eruptions," G. Behrend, *Amer. Arch. Derm.*, vol. vii., October, 1881. "Vaccinides," by Dauchez, "Thèse de Paris," 1883. "Vaccinal Eruptions" (five cases), Napier, *Glasgow Med. Jour.*, June, 1883, p. 424. Morris, "Introduction to Discussion on Vaccination Eruptions," *Brit. Med. Jour.*, November 29, 1890. L. Franck, *Amer. Jour. Cut. Dis.*, vol. xiii. (1895), p. 142. Acland, "Vaccinia in Man," article in Allbutt's "System of Medicine." Reprint, Macmillan, 1897. A good *résumé* of the whole subject.

however, special to it, and are usually transitory, and, if the enormous number of children vaccinated be considered, extremely rare. Moreover, since there is seldom more than one of several vaccinated from the same lymph who show any eruption, it is obviously the soil rather than the seed that is at fault, and that it is not due to "bad matter," as the laity generally imagine; and indeed true vaccine eruptions are more common from calf than from humanized lymph vaccinations.

The following classification is modified from the one proposed by Morris, as it did not quite cover all the facts:

Group I.—Eruptions resulting from pure vaccine inoculation.

A. Secondary local inoculation of vaccine.

B. Eruptions within the first three days before the vesicles form, which include urticaria, erythema multiforme, vesicular and bullous eruptions.

C. Eruptions following the development of the vesicles due to the absorption of the virus include: (*a*) morbilliform, scarlatiniform, and diffuse erythema, erythema multiforme, vaccine lichen, and purpura; (*b*) generalized vaccinia, "vaccine généralisée" of French authors.

D. Sequelæ of vaccination, eczema, psoriasis, urticaria, etc.

Group II.—Eruptions due to the vaccine plus some other virus.

A. Introduced at the time of vaccination.

(*a*) Producing local disease: impetigo contagiosa (exceptional), or other form of superficial inflammation.

(*b*) Producing constitutional disease: syphilis, leprosy, general tuberculosis (?).

B. Introduced after the development of the vesicles nearly always after the eighth day: erysipelas, cellulitis, impetigo contagiosa (common), furunculosis, granulation tumors, gangrene (local or disseminate), pyemia.

It will be observed that the eruptions in Group I. are unavoidable with our present knowledge, and are largely, if not entirely, dependent on the idiosyncrasy of the patient. Those in Group II., on the contrary, are all avoidable; those in Division A. by scrupulous care on the part of the operator, either as regards cleanliness of the patient's skin, or of his instruments, to avoid the local effects of A. (*a*), while A. (*b*) may be avoided by care in the selection of the vaccinifer and in the mode of taking

the vaccine from the vesicle, or, still better, by the use of glycerinated calf lymph. Very much may be done to avoid the diseases under B. in this group by the preservation of local antisepticism, *e. g.*, by covering the vesicles with alembroth wool or gauze, which may be tacked to the sleeve, and by seeing that the surroundings of the patient are thoroughly hygienic. The last point is not, however, in the doctor's hands, as a rule.

Taking the above eruptions in their order—

Secondary inoculation * sometimes occurs between the formation of the primary vesicles and the eighth day, and in such cases the secondary vesicles catch up, so to speak, the primary one, and are mature at the same time. This fact was known to Jenner. Of this kind is Padieu's † case of confluent vaccination over an eczematous surface, from which the child's mother and nurse were accidentally inoculated on the face. Lacour records a similar case, with fatal result. In Sharkey's ‡ case a similar widespread auto-inoculation appears to have supervened on varicella, though it is given as an instance of variola or varicella. In a case from Lassar's clinic, § *accidental vaccination* over an extensive eczematous surface occurred from the child having been bathed in the same water as the vaccinated baby. Trousseau found that reinoculation could be performed successfully up to the ninth or tenth day.

Nicolle and Thiercelin have reported cases inoculated on to zoster and herpes labialis. Accidental inoculation, chiefly from children to parents, occurs not infrequently, and, as might be expected, often in odd places, face, genitals, etc., and I have seen it grafted on to impetigo contagiosa of the chin in the child from its revaccinated mother.

Accidental inoculation also occurs from cowpox to man in milkers, from horsepox ‖ to grooms, and others who have

* Dr. Shirley Murphy, who had large experience as one of the directors of the Government animal vaccine establishment, informs me that this secondary inoculation is not at all uncommon. What he considered a well-marked case of this was brought to U. C. H. in the summer of 1886, with apparently typical vesicles on the buttocks.

† Quoted in *Amer. Arch. Derm.*, vol. vii. p. 89.

‡ Sharkey, *Lancet*, vol. ii. (1887), p. 47.

§ Reported by Peter, *Annales de Derm.*, vol. v. (1894), p. 535.

‖ Hutchinson's smaller Atlas, Plate XCVIII., face. Langton, *Clin. Soc. Trans.*, vol. x. (1877), p. 121, illustrated.

treated horses suffering from "grease"; one such case came under my observation in which the pocks were more raised up and vesicular than in cowpox. In other cases there has been enough resemblance to vaccinia to suggest the nature of the lesion. The variola of sheep-pox has also been transmitted to man. In an observation of Bosc and Bourquier * it took the form of a variolous eruption localized to the hand and forearms, but it subsided in a week.

Recrudescence of vaccination sometimes occurs.† It usually occurs shortly after the vaccination, but Sir Thomas Watson records the case of a girl of fourteen, in whom, in the course of an influenza, vesicles developed on the site of her scars from infantile vaccination, and an elder sister was successfully revaccinated from the fluid from the vesicles. In Washbourn's ‡ case scarlet fever woke up the vaccination of two years before.

Generalized Vaccinia, the "vaccine généralisée" of French authors, occurs under exceptional circumstances, chiefly after animal vaccination; the vaccine eruption, instead of being confined to the points of inoculation, is widely spread. Thus Dr. Longstaffe § of Wandsworth records the case of his own child, in which there were between eighty and ninety secondary vesicles, seventy of which were on the vaccinated arm. Colcott Fox ‖ showed what seemed to be a genuine case of generalized vaccinia in a child nineteen days old. The vaccine lesion ran a normal course until the ninth day, when lesions began to appear all over the body, and a large number of pustules very like those

* *Trans. Twelfth Internat. Cong.*, Moscow, 1897. Abs. in *Brit. Jour. Derm.*, vol. ix. (1897), p. 459.

† Dr. J. R. Williams, *Brit. Med. Jour.*, March 15, 1902, p. 696, relates some interesting cases.

‡ *Lancet*, March 8, 1902, p. 664.

§ *Brit. Med. Jour.*, 1883, March 10.

‖ *Derm. Soc.*, June 8, 1892. Published with another case in the *Clin. Soc. Trans.* vol. xxvi. (1893), p. 108. At p. 114 is a case by Acland and Fisher, with colored illustration, where a child three months old, vaccinated with humanized lymph, had a confluent eruption round the points of inoculation by the fourteenth day, followed by a secondary eruption over the trunk and extremities in scattered pocks, of which there were twenty-eight on the forty-third day. The child died, exhausted, on the forty-ninth day. Numerous references.

of vaccinia developed. Both in this his second case, and Acland's, and in other cases, a large number of confluent vaccine vesicles formed round the site of inoculation before they appeared in other parts of the body.

It is still a matter for discussion whether this multiplication of vesicles is only a result of secondary inoculation or of a true generalization of the eruption, due either to the exceptional activity of the virus or an abnormal receptivity of the patient. That it is not the virus is shown by the fact that in many of the recorded cases the vaccinia of other children vaccinated with the same lymph has run a normal course. That very widespread vaccinias may occur from accidental or auto-inoculations on a pre-existing eruption has already been shown; but there is a residue of cases in which the balance of evidence is in favor of a generalization from within, as in the following case of Hugeses (de Saïda),* a child of four months, who was vaccinated with seventeen other children from calf lymph. On the fourth day there was a general eruption, which developed into typical lesions by the seventh day with high fever and general disturbance, and the child died on the ninth day. In Gaucher's case numerous "boutons" came out all over the body on the ninth day in many positions; auto-inoculation by scratching was impossible. The child died on the fifteenth day.

This is also Haslund's † opinion of some cases published by him; and Acland, in the paper already referred to, adduces cases showing the possibility of general infection through the digestive, circulatory, or respiratory system, for vaccinia, as Chauveau had previously shown, was possible in the horse, into the trachea, lymphatics, and veins of which he injected vaccine virus. Acland also quotes authorities to prove that on the one hand "the receptivity of an individual to successive vaccinations in series diminishes during the second week and usually becomes extinct before the fourth"; and on the other that, "in inoculated smallpox, local manifestations may be reproduced by succes-

* *Maladies Cutanées*, vol. xii. (1899), p. 224.

† "Vaccinia generalisata und deren Pathogenese," by Haslund, *Arch. f. Derm. u. Syph.*, vol. xlviii. (1899), pp. 205 and 371, which gives a *résumé* of the subject with numerous references to date. Paul also has contributed a paper, expressing the same views, in vol. lii. (1900), p. 3. Abs. *Annales de Derm.*, vol. ii. (1901), p. 110.

sive inoculations over considerable periods of time." Austin Martin related an instance of generalized vaccinia (four hundred typical vesicles) in a nursling from its revaccinated mother, and he cites Cazal, who produced it by giving powdered vaccinia crust by the mouth in a child of four refractory to vaccination by ordinary methods. There were a hundred and eighty typical vesicles.

Some of the instances reported have been from erroneous diagnosis, such as impetigo contagiosa or the confluent bromid eruptions, or were probably examples of mild ulcerating vaccinia, such as will be described under Vacinia gangrænosa.

The other general eruptions under C. have very little that is special to vaccination, similar lesions being produced by other causes. Under the name of **roseola vaccina.** Hebra describes an erythematous eruption, appearing from the third to the eighteenth day after vaccination, analogous to that seen sometimes at the onset of variola. The eruption consists of red maculæ from a threepenny piece to the palm in size, commencing usually upon the arms, spreading sometimes all over, and leaving no trace behind. It is accompanied occasionally with a slight rise of temperature, lasting only a few hours. This form of eruption is rare in my experience, and as a rule the papules are smaller. Thus in one such case they were flat, from a pin's head to the third of an inch, except one palm-sized patch on the left breast; and on the legs they were pin's-point-sized and acuminate. Behrend also describes this as morbilliform. I have, however, seen extensive diffuse erythema on the trunk, while on the limbs there were papules and papulo-vesicles. Sometimes the erythema becomes purpuric as in Epstein's * cases. He met with 14 cases of "Erythema vaccinosum" out of 344 cases vaccinated with calf-lymph. It appeared from the fifth to the eleventh day. Many of his cases no doubt would come under the eruption which I find most common, and of which I have notes of over 20 cases, the so-called **vaccine lichen,** which is really an erythema. It may be either **papular, papulo-vesicular,** or **pustular,** very rarely **bullous.** It comes out from the fourth to the eighteenth day, most frequently on the eighth; begins on the arms in half the cases, and on the trunk, neck, or face in the rest; then, by successive crops, it may spread over a

* Abs. *Brit. Med. Jour. Supplement,* July 16, 1893.

considerable part or even the whole of the body, pretty evenly distributed, and sometimes tending to form circles or segments of circles.

The papules are acuminate, pin's-point-sized, and bright red, and these characters may be preserved to the end. They usually remain discrete, but sometimes coalesce into patches; but, as a rule, a good proportion of the papules are crowned with small vesicles and pustules, and have a red areola sometimes half an inch in diameter, the vesicles or pustules being generally small. In a moderate number of cases the eruption as a whole is vesicular, or rather papulo-vesicular, but it is rarely entirely pustular.

In the vesicular cases sometimes the vesicles enlarge and become herpetiform, and more rarely bullous, as recorded by Behrend and others. Of this an extreme instance was brought to me by Dr. Claremont. A girl of fifteen months was vaccinated with glycerinated calf-lymph; on the eleventh day red patches appeared on the face, on which minute vesicles crowded in groups, developed and coalesced into elongated bullæ, and by the sixteenth day some were over three inches long on the vaccinated arm. On the lower limbs the single vesicles varied from a millet seed to a large pea. At the time I saw the case there were still some erythematous patches with minute vesicles on them, and also vesicular circles with a clear center on the thighs. There were vesicles also on the palms, soles, and palate. The vaccination pocks were a little slow in healing, but there was no other abnormality.

In ordinary cases, when the small vesicles dry up, they leave the base as a flat, shining papule, like lichen planus. There is rarely any constitutional disturbance, and usually only moderate itching, though occasionally it is severe. The rash lasts from a few days to a week or two, but in some of the vesiculo-pustular cases fresh crops keep on appearing, perhaps for months, attended with considerable itching, precisely similar to the **varicella prurigo** of Hutchinson. The following case illustrates a good many features of these eruptions:

'A week after vaccination a general, red, conically pointed, papular eruption appeared, lasted a week, and then became vesicular, first on the shoulders and then down the arms and legs, feet, palms, soles, and slightly on the trunk; the vesicles

became pustules from one-sixteenth to one-eighth of an inch in size, with a slight red areola; there was much itching, and the eruption continued to come out in crops for some time.

Wheals are not uncommon in connection with the pruritic cases, probably due to scratching, but they are not often seen in the early periods; occasionally **urticaria** is present as early as the second day, but it is much more common as a sequela. **Urticaria pigmentosa** has also been observed as a sequel.

Behrend records typical cases of **erythema exudativum multiforme** in the first week of vaccination, and I have seen a well-marked case which began on the ninth day. The flat papules enlarged up to flat patches the size of a shilling, and cleared in the center into rings. Napier met with a case which began as rings on the eleventh day. Norman Walker * relates five cases, some like erythema iris. In other cases the papules enlarge into convex nodules, from a split pea to half a marble, chiefly on the back of the hands and wrists, an erythema nodulare † in short.

Erythema exudativum and urticaria have also been noticed in revaccination. Gregory ‡ has described hemorrhagic vaccinia.

Eczema may either start from the vaccinia pustules in the same way that it may start from any other form of dermatitis, or begin elsewhere soon after vaccination. It appears to excite it only in predisposed subjects, being, as it were, only the match to the train already laid, and by no means always in these, as eczematous children, who are in otherwise good health, may often be vaccinated without any aggravation of existing disease, and vaccination has indeed sometimes proved curative. In few cases can vaccination be held responsible where the vaccinia pustule has completely healed before eczema appears.

Psoriasis may be mentioned among what may be called curiosities. A case was described by Chambard § which was excited by vaccination, and two by Rohé, one a man, the other a boy;

* N. Walker, *Brit. Med. Jour.*, May 18 (1901), p. 1201.

† E. A. Barton of Kensington sent me notes of three such cases.

‡ Quoted in Hutchinson's *Archives of Surgery*, vol. i. p. 195.

§ *Annales de Derm.et de Syph.*, vol. vi. (1885), p. 498; *Amer. Jour. Cut. and Ven. Dis.*, Rohé, vol. i. p. 11. Piffard, p. 119, and T. Wood, p. 161.

both had been vaccinated from the calf. Moulinel * collected these and other cases, to which may be added cases by Robinson and Rioblanc † (tenth case), and another by Truffi ‡ in a boy of eleven years. It has been suggested that it is the traumatism, and not the virus, which excited a pre-existing psoriasis. In favor of this is the fact that all the cases I can trace have not been infants, but children or adults. In Wood's cases, a man of twenty-one with inveterate psoriasis was apparently cured by vaccination, while his two sisters of eight and eleven years, vaccinated from a calf, were attacked by psoriasis soon after the vacinia healed, never having shown any sign of it previously.

Still more inexplicable, Diday describes a case in which sixty days after inoculation round each of the cicatrices a coronet of hairs sprang up, which were three-eighths of an inch long four months later. **Keloid** § has occasionally developed on the site of the vaccination scars. Of this I have seen two cases. It is more likely to occur where from any cause there has been a delay in the healing of the vaccinia vesicles.

Dermatitis Herpetiformis apparently due to vaccination, but beginning six weeks after it, is recorded by Pusey ‖ of Chicago, who refers to a few other cases. It lasted four and a half years. **Pemphigus** has also been reported, but the diagnosis has not always been indisputable.

Bowen of Boston records six cases in children between five and ten years, in which distinctly grouped vesicular and bullous eruptions developed within four weeks of vaccination in one case, and in other cases within one or two weeks. Ringed erythema preceded the vesicular element in some cases. There was eosinophilia (in two cases eighteen to twenty-one per cent.) both in the blood and bullæ, and the eruption lasted for months or years. In the discussion on these cases the diagnosis was

* "Thèse de Paris," 1884.

† *Annales de Derm.*, vol. vi. (1895), p. 880, with references to date. In vol. viii. (1897), p. 1169 is an abstract of a "Thèse" by P. Vignale, but he does not appear to have added another case.

‡ Truffi's case is published in abstract in the *Annales*, vol. x. (1899), p. 799. He leans to the diagnosis of seborrheic eczema.

§ Hutchinson, *loc cit.*, p. 197. Acland, *loc. cit.*, gives references.

‖ *Amer. Jour. Cut. Dis.*, vol. xv. (1897), p. 158; and Bowen, *loc. cit.*, vol. xix, September, 1901.

disputed by some, but as dermatitis herpetiformis is probably of toxic origin, there is nothing very improbable about it. A well-marked case in an adult was related by Galloway at the Dermatological Society in April, 1902, when Sequeira showed a pemphigus after vaccination.

Although a very rare occurrence, the possibility of communicating **syphilis** by vaccination has been established by Hutchinson, Cory, and others;* and the same still more rare possibility must be considered for **leprosy.** Besides Daubler's two cases from Robben Island is the case related by Gairdner. The use of calf lymph and clean instruments will entirely preclude such a possibility in the future.

I am not aware of any recorded proof of tuberculosis being inoculated with vaccinia, but there are several cases of **Lupus vulgaris** appearing on the site of vaccination, which suggests that such an accident is possible and even probable.†

Of the other avoidable eruptions, **impetigo contagiosa** is very rare, as indeed it ought to be, directly resulting from the operation; but as a sequel it is very common. The pus of the vaccinia pustule becomes inoculable from the deposition of pus cocci from the air or from those already in the skin, and the inoculable pus is conveyed to other parts of the body by the child's fingers, chiefly at the time when the vaccinated arm becomes irritable. **Furunculosis** occurs from the absorption of these cocci and dissemination through the circulation. **Erysipelas, cellulitis,** and **pyemia** occur chiefly when the hygienic surroundings are faulty, but I have known one case of erysipelas supervene on an uncured impetigo contagiosa several weeks after the vaccinal pocks had completely healed, while in another the disease was communicated by the mother to her infant, she having visited a neighbor suffering from erysipelas while the child's vaccination was incubating, and had herself suffered from the general symptoms of erysipelas without any external mani-

*Such cases scarcely ever occur now. At the East London Hospital for Children, where the patients were the poorest of the poor, over twenty thousand cases passed through my hands, and I never saw a case, nor did any of my colleagues there, or I should certainly have heard of it. Colcott Fox has had a similar negative experience at a children's hospital.

†Graham Little, *Brit. Jour. Derm.*, vol. xiii. (1901), p. 81, records a case and quotes several others.

festation. The child first showed the disease on the twelfth day.*

In these cases the disease generally presents itself as a cutaneous and subcutaneous infiltration of the skin, with a well-defined, raised, thick, reddened border, which travels up a limb or on the trunk an inch or more a day, the infiltration sometimes rapidly subsiding in the part traveled over, or the whole limb remains distended and hard, with much deepened folds like an acute elephantiasis. There is very little or no redness except at the border, but generally a waxy hue when distended, or slight pigmentation in rapidly subsiding cases. There is often very marked febrile disturbance, 103° to 104° F., and if the trunk is extensively involved death is likely to ensue, but where only one limb at a time is attacked, recovery may occur.

The **ulcerative** and **gangrenous** lesions may be local or disseminated. I remember a case in which the child was unwittingly vaccinated during the incubation of scarlatina, which developed before the eighth day of vaccination. The whole of the four vaccination places coalesced into a slough the size of a crown piece. The child recovered. Balzer met with a similar result after revaccinating a syphilitic subject. Hutchinson † relates similar cases, some fatal. The disseminated form will be described with other forms of gangrene of the skin.

Another lesion due to pus cocci is the granulomatous development which may supervene on any ulcerative lesion, the so-called botryomycosis hominis when it forms a pedunculated tumor, but which may only form a convex moist swelling on the site of vaccination. E. Gardner ‡ of Warwick records a case, and I know a few other instances.

The *treatment* of the erythematous vaccinides is very simple, as they rarely last more than a week or two. A laxative, with a soothing lotion to allay irritation, such as liq. carbonis detergens ℥v to ℥j of water or calamin lotion, would fulfill all requirements for the dry forms. For moist, a weak boracic or iodo-

* A remarkable outbreak (forty-three cases) of chancriform vaccinia, supposed to be due to pus cocci, is recorded by Leloir, *Le Bulletin Médical* (1889), p. 1419.

† *Loc. cit.*, vol. i. pp. 97, 193.

‡ Granuloma following revaccination. *Brit. Med. Jour.*, May 29, 1897, p. 1347.

form ointment would be preferable. Where there is a high degree of inflammation attendant on the vaccinated arm, or elsewhere, a lactate of lead lotion often gives great relief. The treatment for the other eruptions will be found in their own sections.

SPHACELODERMIA.

Deriv.—σφάκελος, gangrene.

Synonym.—Gangrene of the skin.

Apart from injury, death of a more or less extensive portion of the skin may occur as a kind of pathological accident in many conditions, chiefly of inflammatory origin. Most of them may be classified under one or other of the following heads, but in some we are at a loss to know under which category it would be correct to place them. All are due to obstruction of the circulation in the part, and that chiefly arterial. A hemorrhage into or beneath the skin may also lead to death of the part and sloughing, as I have often witnessed.

- I. Within the vessel
  - Embolism.
  - Thrombosis.
- II. Changes in the wall
  - Acute arteritis.
    - *a.* Bacterial.
    - *b.* Syphilitic arteritis.
  - Calcareous degeneration, *e. g.*, senile gangrene.
  - Contraction of the muscular or other coats.
    - Spasmodic, *e. g.*, symmetrical gangrene.
  - Trophic defects, *e. g.*, acute decubitus.
    - Chronic, *e. g.*, ergotism.
  - Purpuric gangrene from blood extravasation.
- III. Pressure on the vessels from without
  - Inflammatory effusion round a vessel.
  - Tumors, etc.

Some, like **noma** and **dermatitis gangrænosa infantum**, are bacterial, and probably gangrene occurring in diabetes has a similar origin. The destruction is seldom limited to the skin, affecting the other tissues more or less deeply.

A **paronychia gangrænosa** has been described by G. H. Todd,* resulting in the loss of the terminal phalanges. See also Morvan's disease.

* *Dub. Hosp. Rep.*, vol. ii. p. 274.

Only five kinds of gangrene of the skin need special description here, viz., Symmetrical gangrene, Hysterical gangrene, Dermatitis gangrænosa infantum, Diabetic gangrene, and Phagedena tropica.

Symmetrical Gangrene. *Synonym.*—Raynaud's disease.

Definition.—A local arterial ischemia, generally followed by asphyxia, occurring at the periphery of the circulation, and producing symmetrically distributed gangrene of the skin and other tissues in the affected region.

This disease, the extreme forms of which are rare, was first described by Raynaud,* and his observations have been confirmed and extended by Barlow, Southey, and others.

Symptoms.—It begins usually after exposure to cold, and often without any premonitory symptoms, except sleepiness. The parts most frequently attacked are the fingers and toes, especially the second and third phalanges, though the nose and ears are not uncommonly involved. The affected parts become pale and hard, followed by swelling, numbness, and sharp darting or stabbing pains. The ischemia and consequent discoloration increase rapidly or slowly until the part becomes quite black, in a period varying from a few hours to a few weeks. Black bullæ sometimes appear at the line of demarcation, which has on its border a red band, but as a rule the gangrene is dry. Separation of the whole, or part of the tissues of the affected area, slowly ensues.

Monro found that fifty per cent. had local syncope, ninety per cent. local asphyxia, and sixty-eight per cent. had necrosis. I have several times observed a progressiveness in the severity of the attacks in each succeeding winter, or it may be a diminished resistance.

Variations.—Any part of the body, limbs, trunk, or face may be attacked in exceptional cases. As a rule only two extremi-

* "De l'Asphyxie locale et de la Gangrène symétrique des extrêmités," "Thèse de Paris," 1862, and *Arch. Gén. de Méd.*, vol. i. pp. 5, 189 (Paris, 1874). A translation by Sir Thomas Barlow, for the New Sydenham Society, with valuable notes, is published in "Selected Monographs," 1888. "Raynaud's Disease," by T. K. Monro, 1899. Glasgow: J. Maclehose & Sons. Founded on 180 cases observed and collected. Copious bibliography.

ties are involved, but sometimes all four. Thus in Southey's case,* a girl of two and a half, it began on the calves, after a slight feverish attack, and then numerous patches, becoming rapidly gangrenous, appeared on the backs of the legs, thighs, buttocks, and upper arms, worst where there was pressure, the child dying thirty-two hours from the onset. On the other hand, the gangrene may be limited to a small area of the pulp of the finger tip, and I have seen it so superficial that only the papillary layer was affected and the epidermis was hard and mummified, but no scar was left.

The process may, however, stop short of the death of the part, which may simply become white, cold, and hard like wax, and after remaining so for a few minutes or a few hours, recover, to be, however, again attacked after a varying interval, the local syncope eventually passing on to a local asphyxia; or there may be local asphyxia without antecedent local syncope. This mild condition may also be present on one side, while the other side becomes gangrenous, as in T. Smith's case,† a girl of three years, in whom the left hand was cold and livid, while on the right there was lividity, going on to gangrene of the fingers and thumb up to the first knuckles, where complete separation occurred; or the whole of the phenomena may be entirely unilateral, but this is exceptional. The pulse is small, even filiform, but can be felt close up to the gangrenous part.

Etiology.—The disease affects both sexes; in adults, males more than females, probably on account of their being more exposed to vicissitudes of temperature; but all ages are liable to it, ranging from two and a half to sixty-three, of whom a large proportion are children, and in all ages the female sex predominates as two to one (Monro).

Few positive statements as to more direct causation can be made, though exposure to cold has been the determining influence in a large proportion; hence the disease occurs chiefly in the winter. Some cases have occurred after diphtheria, typhoid, scarlatina, measles, malaria, and syphilis, one in connection with multiple tumors (B. O'Connor), one with pulsating tumors in the brain (F. Treves), two with diabetes (Raynaud and C. Fox), many with hemoglobinuria (Wilks, Barlow, Southey, etc.).

* *Path. Trans.*, vol. xxxiv. (1883), p. 286.

† *Clin. Soc. Trans.*, vol. xiii., p. 196.

End-joint arthritis, temporary eye symptoms, and mental derangement have also been observed in a few cases, and Monro's statistics show that twelve per cent. have some abnormality of the cardio-vascular system, such as Bright's disease, exophthalmic goiter, or some allied neurosis. Some cases have been pronounced hysterics, and the attacks have been associated with polyuria. It has often occurred as a complication of generalized sclerodermia with atrophic shrinking and sclerodactylia, seven per cent., according to Monro. Other skin eruptions observed in association with it are eczema, hyperidrosis, purpura, and urticaria both ordinary and factitious.

On the other hand, many have had no such special antecedents, though it is common to find that the sufferers have habitually cold hands and feet, and while they are seldom liable to chilblains, they are to "dead or waxy fingers," or other symptoms of a poor circulation, the force of which is exhausted before it reaches the periphery, although the heart is not necessarily a weak one. An impressionable nervous system is present in a good many of the patients.

Pathology.—There are evidently arrest of the arterial supply of blood and venous stasis, followed by transudation of blood constituents into the tissues. There is a presumption in favor of spasm of the arterioles, as the immediate antecedent of these conditions, though whether due to a central or peripheral nerve influence cannot be established; Raynaud thought it was central, Pitres and Veillard regard it as a peripheral neuritis, while Buzzard thinks it is central and due to a blood poison. The association with other nervous phenomena in some cases, such as diphtheritic paralysis, or hemoglobinuria, is confirmatory of its neurotic and toxic origin, and there is growing evidence in favor of peripheral neuritis for the majority of cases.

In Ehrmann's and other cases it commenced with pains radiating in the forearms along the median and ulnar nerves. Probably central lesions high up in the cord or in the medulla oblongata may produce similar phenomena.

Diagnosis.—This is usually easy. The occurrence of coldness and lividity, followed by gangrene of the extremities, symmetrically distributed, is pathognomonic, and even where actual death of the part does not occur the symmetry is very significant, though it may be unequal in degree.

Prognosis.—Where the area involved is extensive, or the patient very young or very old, or broken down in constitution, the prognosis is serious; in more limited cases the dead parts separate or are removed, and the patient gets well, though he is liable to other attacks.

Treatment.—The constant current, applied with one pole along the spine and the other along the extremity to diminish the irritability of the vaso-motor centers, was recommended by Raynaud, and has been found to give marked relief. Barlow obtained better results by immersing the end of the affected limb in a large basin of salt water. The negative pole is placed in the water, the other is applied to the limb. The current is used as strong as the patient can comfortably bear, contact being made and broken frequently to produce contractions of the limb. Shampooing is also a useful adjunct. When galvanism is used quite early, the full development of the attack is averted. Hot applications should be avoided; cold and friction, as in frostbite, being preferable. Nitrite of amyl and nitroglycerin have been tried ineffectually, as far as the cure of the affection is concerned, but they give temporary relief and in cold weather improve the circulation while the patient is under their influence. Hutchinson recommends opium one-quarter grain, quinine two grains three times a day. In cases associated with intermittent hemoglobinuria, quinine in three- to five-grain doses may be given. Voisin uses oxygen footbaths, and Stoker's apparatus would be a convenient way of applying it. When gangrene has actually occurred, the limb is treated on the ordinary surgical principles for dry gangrene.

Symmetrical Gangrene not due to Raynaud's Disease may undoubtedly occur. Phisalix placed a microbial culture in a collodion capsule in the peritoneal cavity of a guinea pig, and symmetrical gangrene of the extremities, nose, and ears was produced. Vidal reported a case in which suppurative peritonitis with great effusion was followed by symmetrical gangrene of the lower extremities. Treves had a case following a pulsating tumor of the brain. H. Dufour relates a case following double pneumonia, and other cases could be cited.*

* Author's Atlas, Plate XL., shows moist gangrene which affected both feet symmetrically, after direct exposure to cold.

Hysterical Gangrene.* *Synonyms.*—Neurotic gangrene; Spontaneous gangrene; Erythema gangrænosum.

Definition.—Cases of recurrent gangrene with no obvious cause, which the theory of a neurosis is supposed to explain.

From time to time cases have been put on record under one or other of the above synonyms.

Probably the most remarkable was that of Doutrelepont, which may be taken as the type of nearly all the rest. The patient, an hysterical girl, æt. twenty-one, was under observation for five years, until her death from phthisis. A trifling injury under the nail was the immediate antecedent. The day after the injury small gangrenous spots appeared on the back of the left hand, and successive lesions appeared at intervals over the whole limb and left side, and two months from the commencement the right side also, and later the head and face. The intervals between the attacks varied, sometimes a month or two. A rise in temperature and painful pricking preceded each outbreak, and then whitish-gray lesions on the same level as the normal skin appeared, made up of a group of smaller rounded lesions, "herpetiform groups," but the lesions were not vesicular to the naked eye, but with a lens there were inchoate vesicles, which, from the rapidity of the process, did not develop. The resulting lesions were always superficial, but most of the scars became keloidal, except when the wounds were dressed with corrosive sublimate. At a later period, however, vesicles and bullæ did sometimes precede the gangrene, though sloughs without vesicles were the rule. About the end of the third year the mouth became involved. Attacks became more frequent, affecting every region of the body; mental changes with great

* *Literature.*—Doutrelepont, "Ueber einen Fall von acuter multipler Hautgangrän," *Archiv f. Derm. u. Syph.*, vol. xiii. (1886), p. 179 (colored plate), and sequel in volume for 1890, p. 380, and full abs. *Ann. de Derm. et de Syph.*, vol. i. (1890), p. 583. Joseph, "Ueber multiple neurotische Hautgangrän," *Archiv f. Derm. u. Syph.*, vol. xxxi. (1895), p. 323. Bayet, "Gangrènes disséminées et successives de la peau d'origine hystérique," *Annales de Derm. et de Syph.*, vol. v. (1894), p. 501. Hallopeau et Le Damany, "Altérations gangréneuses et nécrotiques multiples et unilatérales de l'Extrêmité Céphalique," *Annales de Derm. et de Syph.*, vol. v. (1894), pp. 1261 and 1349; *Ibid.*, vol. vi. (1895), pp. 213 and 231. Report of the discussion at the Vienna Society of Physicians.

excitement alternating with depression occurred and led to suicidal attempts, and five years from the onset the patient died from phthisis, but towards the end the frequency of the occurrence of gangrenous patches diminished.

Duhring's * case was particularly interesting. It started from a burn in a woman, æt. thirty-four, was vesiculo-bullous, began on the left hand, and two years after affected the right hand, which eventually had to be amputated. Nothing improved it until she had the Weir-Mitchell rest-cure, when the gangrene stopped and the places healed. It is noteworthy that she would be under closer observation than usual during the cure. Not long after she died from opium poisoning, for she was a confirmed opium eater, as well as a pronounced hysteric. Spiller made an examination and found some endarteritis and changes in the nerves of the right arm, but no central nerve changes. In an almost precisely similar case in a young lady, a morphia eater, it began also with a carbolic acid burn, and I conclusively proved it to be self-inflicted.

Many other cases in hysterical women have been recorded, of which those by Bayet, H. Hebra, Schwimmer, and Joseph may be especially mentioned, while Joseph, Boyet, Kaposi, and Quinquaud have recorded very similar cases, mostly in neurotic men, Joseph's case having been an apparent exception.

In some of them the vesicular commencement was absent, but the type case shows that this is not an essential difference. In most of them a slight injury preceded the first gangrenous lesion, which did not commence on the site of the injury. In Joseph's case the antecedent injury was a sulphuric acid burn, and the attacks only recurred every six months, at the beginning and end of the winter.

Since all the women were young and hysterical, and the men also were generally described as neurotic and hysterical, the theory of self-infliction is the most obvious explanation; and while the slight traumatism, so frequently an antecedent, has been assumed to be the starting point of a neuritis, and so to piece out the theory of a neurotic origin, on the other hand,

* International Atlas of Rare Diseases of the Skin, Plate XLVIII., Fig. 5. *Brit. Jour. Derm.*, vol. xiii. (1901), gives Spiller's account of the P.M. changes in abstract, but his discussion of the possible causes of gangrene does not throw much light on this particular case.

as set forth under " Feigned Diseases," a slight injury has often been the suggestive element for imposture. Further, some cases first published as hysterical gangrene have subsequently been proved to be artificial.

Such was Erb's case, which was proved to be due to caustic potash, and by varying the duration of its application it was possible to produce erythema, wheals, herpetiform vesicles, and bullæ. Many cases have commenced, and remained left-sided for some time, but the right has generally been invaded at a later period. While all this would appear to point conclusively to an artificial origin, on the other hand there is the fact that many of the cases have been for a long time under the care of trained observers fully alive to the possibility of imposture, and who have tried all the means in their power to eliminate such an error.

The supposition of a physical neurosis does not really explain it, for although a severe neuritis will occasionally lead to gangrene of the skin, as in some cases of zoster, in these cases there is only a single attack of the gangrenous process, and our present knowledge does not admit of a satisfactory pathological explanation for such cases. No treatment has been hitherto of any avail to prevent recurrences. My own experience is strongly in favor of the theory of self-infliction.

Zoster Atypicus Gangrænosus et Hystericus. Kaposi has described a vesicular affection which he considers entitled to the above designation. In all the cases, of which he had eleven, the main features were an eruption of vesicles and papules, chiefly in groups, followed by central scabbing, which was often surrounded by a corona of pus or minute pustules. In some parts from coalescence large areas of gangrene were produced, and when the sloughs separated the granulating surface cicatrized, often with keloid development in the scar. The eruption stage lasted from four to eight days, and then retrogression took place. The eruption was symmetrical, did not correspond to any spinal or cranial nerves, and showed a marked tendency to recurrence; in the first case three times, while in the second and third cases there were second attacks after a year or two. The first three cases were all in hysterical young women, but the fourth was a man who was only seen once, and had on his left

forearm scabbing, vesicular groups, and striæ like case three. In its unilateral and, possibly, nerve distribution it was therefore not on all-fours with the first three cases. Kaposi discusses the diagnosis and pathology of the affection, and considers artificial production of the eruption may be excluded, and that it was distinctly different from the so-called spontaneous gangrene described in Doutrelepont's case and in many others; and finally refers it to atypical zoster, as the gangrene, bilateral distribution, and tendency to recur were all features which are seen occasionally in herpes zoster.* While its nosological position is doubtful, it appears not to have any real relationship to zoster, and to rank only as at most a variety of hysterical gangrene.

Dermatitis Gangrænosa Infantum.† *Synonyms.*—Varicella gangrænosa (Hutchinson), Pemphigus gangrænosus (Whitley Stokes); Rupia escharotica (Fagge); *Fr.*, Ecthyma térébrant. Germ. Ecthyma gangrænosum.

Definition.—A gangrenous eruption, following varicella and other pustular eruptions of children.

This rare condition was first discovered by Hutchinson ‡ as a complication of varicella and subsequently of vaccinia § also, and since then many cases have been observed by Barlow, Lees, Haward, Payne, myself,‖ and others; there can also be little doubt, as Hutchinson remarks, that Whitley Stokes' description of an epidemic of "pemphigus gangrænosus" in Ireland in 1809, and, as Barlow has pointed out, the "rupia escharotica" speci-

* *Archiv für Derm. und Syph.*, vol. xxi. (1889), p. 561, with colored plate, and Hand Atlas, Plates CVIII. and CXII. Abs. *Brit. Jour. Derm.* vol. i. (1889), p. 278.

† Illustrated, Author's Atlas, Plate XLI., Fig 1, a severe case following miliaria; XLII., Fig. 1, a mild case with varicella. St. Louis Atlas, Plate XX., Fig 2.

‡ "Clinical Lectures on Rare Diseases of the Skin," p. 235, and a full account with Plate, in *Med. Chir. Trans.*, vol. lxv. (1882), p. 1.

§ A case of vaccinia gangrænosa, with recovery, is also recorded by Stokes of Dublin, in *Dublin Jour. of Med. Science*, June, 1880. It began forty-eight hours after vaccination.

‖ See paper by the author in *Med. Chir. Trans.*, vol. lxx. (1887), p. 397: "Multiple Gangrene of the Skin in Infants, and its Causes," with numerous cases.

mens in Guy's Hospital museum,* refer to the same condition. I have, however, ventured to depart from the name bestowed on it by Hutchinson, since it is not, as will be presently shown, always secondary to varicella and vaccinia.

The place of onset and mode of development vary according to whether the gangrene appears early or late in the course of the varicella, or is independent of that disease.

If it occurs while the varicella lesions are still present, it begins on the head or upper part of the body, and instead of the scab being thrown off, ulceration occurs beneath it, and often a pustular border with a red areola is formed, the whole resembling a vaccination pustule. The process extends, both in depth and peripherally, until a black slough is formed from a quarter of an inch to an inch or more in diameter, the smaller ones still with a pustular border and areola. After attaining to a certain size, varying very much, the process of separation sets in, and when completed, a sharp-edged, roundish or oval, conical ulcer is formed, deep or shallow in proportion to the diameter of the slough, some of the largest being quite three-quarters of an inch deep in the center. Extension of the ulcer seldom takes place after the separation of the slough has commenced. When they are closely aggregated coalescence will probably ensue, and then very large ulcers, irregular both in contour and floor, are produced. If any fresh crops are formed, or when it develops after most, if not all, of the varicella lesions have cleared off—perhaps a fortnight or more from the onset—or in cases following vaccination, or otherwise unconnected with varicella, the ulcerative lesions usually commence on the lower half of the body, especially the buttocks and thighs.† Each lesion begins as a pin's-head-sized papulo-pustule, which extends to the size of a pea or larger, ruptures, and, except on the buttocks or wherever it is kept moist, dries in the center to a scab, with the pustular border and red areola like vaccinia, and from this point follows the same course as those which started in a varicella pustule. In some cases the buttocks and parts in contact with the napkin, and sometimes the legs and thighs, are fairly riddled with ulcers of all sizes, shapes, and depths. On the trunk and

* Models 206-209. *Catalogue*, p. 95.

† D. Heath records such a case limited to the scalp in a child of two years.

rest of the body they are not usually numerous; and though some may be very large and deep, the majority are comparatively superficial. Where the lesions are numerous and deep, there is naturally much constitutional disturbance, the temperature ranging up to 104° F. or even higher; lung complications, tubercular, pyemic, or inflammatory, are very frequent, and determine or hurry on the fatal issue. Should the child survive, it is surprising how rapidly the lesions cicatrize, of course leaving deep and indelible scars where the severe lesions have been, but some of the superficial ones do not penetrate below the papillary layer, and these heal with only slight loss of substance, and therefore temporary scarring.

Variations.—In some of the worst cases, where the malignant change occurs very early—*e. g.*, in a case of my own on the third day, and in W. Haward's * on the fourth—hemorrhage takes place into the vesicles, which, from being quite clear, become almost black, perhaps the whole of them in the course of twenty-four hours undergoing this change. In my case the temperature rose to over 105° F., and the child died on the twelfth day after the change in the vesicles. Post-mortem there were numerous small, softening infarcts in the right lung, and broncho-pneumonia in the left. In Haward's case the child died on the eleventh day, and in it also there were pyemic abscesses in the lung.

On the other hand, there are cases of much milder grades than those described, and they are more common than the severe form. The ulceration may be quite superficial, the lesions reaching to the vaccinia-like stage, and then drying up, and there are all degrees, from mere excoriations to pretty deep ulceration, with or without a few lesions going on to gangrenous sloughs.

Hallopeau † describes what he considers to be a separate disease under the name of dermatitis vacciniformis infantilis (herpès vacciniforme, Fournier). The lesions are vaccinia-like in character, but are quite superficial and heal, leaving stains but no scars, with mild antiseptics such as boric acid. They occur only in young infants, chiefly where the napkin comes, especially in the folds, adjacent parts being often similarly

* *Brit. Med. Jour.*, 1883.

† St. Louis Atlas, Plate XX., Fig. 1.

affected. In my opinion * they are only the mildest degree of the disease under consideration. Pringle's † view, that this and the ecthyma térébrant of the French are different to the cases described in this country is, I believe, mistaken.

Sometimes the eruption is distinctly bullous, *e. g.*, in a girl of two years old it began as a bulla with clear contents half an inch across, then became pustular; other bullæ appeared, and some began to ulcerate, but no sloughs were formed, and there was no evidence whatever of varicella.

In the vaccination cases the ulcerative lesions do not start from the vaccinia vesicles, though beginning usually on the vaccinated arm. Their development and course are the same as the others, and they are of all grades of severity.

In the mildest varicella cases fresh crops of papules and pustules keep on appearing, and the process may last for weeks, accompanied by a good deal of itching, but very little if any ulceration. This is the **"varicella prurigo"** of Hutchinson.

In Atkinson's ‡ case the ulcers were chiefly on the extremities; the soft parts of one finger were completely destroyed, and there was extensive ulceration of the face, mouth, and tongue. The child had no constitutional taint, and recovered.

Etiology.—All the cases hitherto recorded have occurred in infants or young children; an analysis of my own and eleven of others in which the age is stated shows that by far the majority occur under one year, the figures being fourteen not exceeding one year, six not exceeding two years, and three under three years of age. S. Mackenzie had a case of a girl, æt. four years; the youngest was three months old.

By far the majority occur in girls; fifteen out of twenty-one cases where the sex is mentioned, and of my own cases, ten out of twelve were females.

With regard to the diseases antecedent to it, formerly, most reporters of cases accepted Mr. Hutchinson's first opinion, which he does not now hold, that they were all consequent on

* This view is confirmed by a case of A. Fournier, in which he relates the case of an infant, æt. sixteen months, which began as herpès vacciniforme and went on to fatal gangrene. *Annales de Derm.*, vol. iv. (1893), p. 25.

† Editorial note to Figs. 1 and 2 of Plate XX.

‡ *Amer. Jour. Med. Sciences*, January, 1884, quoted in *Brain*, January, 1885.

varicella or vaccinia. No doubt varicella is the most frequent antecedent, but there are many others, as I proved years ago, and it is now accepted that, under certain circumstances, any eruption of isolated pustules may be the starting-point of the ulcers; it has also supervened on erythema nodosum with or without purpura * (Demme and Caillaud). Among predisposing causes tuberculosis has been present in so many, as Barlow first pointed out, that it must be more than a mere coincidence. In one of my fatal cases congenital syphilis was present, in two others rickets, while a few were apparently quite healthy. A febrile condition is nearly always present, and cases after measles, scarlatina, and enteric fever are recorded. Gangrenous ulcers, of probably similar character, occur sometimes as a complication of variola in adults as well as in children.

Single gangrenous patches, often of large size, are also met with in infants and young children, both spontaneously and as the result of infectious fevers. They start as a vesicle, pustule, or bulla.

My then colleague, R. Parker, had a case of a girl of twelve, in whom a hydroa was aggravated by the administration of iodid of potassium into hemorrhagic bullæ, which then discharged and gave rise to extensive ulcerative and sloughing lesions, very suggestive of the disease under consideration. Audry relates a case in a woman, æt. forty-seven, in whom a bullous iodid eruption went on to ulceration and sloughing owing to the patient having continued the drug after the eruption had come out.

Pathology.—Nothing is positively known about the pathology, except that Ehlers ‡ of Copenhagen has discovered the bacillus pyocyaneus in two cases of the so-called "ecthyma térébrant" in children. This has been confirmed by F. Hitschmann and Kreibich § also in two cases, who speak of obtaining pure cul-

* Hemorrhage into the skin is always liable, if severe, to lead to sloughing ulcers.

† A. Bowes reports such a case in a child two weeks old, and refers to others. *Lancet*, August 31, 1901, p. 586.

‡ Ehlers, French Translation, *Annales de Derm.*, etc., vol. ii. (1891), p. 793.

§ Hitschmann and Kreibich, *Archiv f. Derm.*, vol. l. (1899), p. 81. In 1888 Wickham found the streptococcus pyogenes as the predominant microbe in one case.

tures of this bacillus as a means of confirming the clinical diagnosis of the disease.

Œttinger, however, has found the same bacillus in relation to a pemphigus diphtheriticus with a gangrenous aspect, and Neumann of Berlin found it with internal and cutaneous hemorrhages. Veillon and Halle * believe an anerobic microbe, the bacillus ramosus, to the probable organism. Even if one of these is not the constant pathogenic agent, it is highly probable that the lesions are due to microbic infection supervening upon varicella and other pustular eruptions in children, under certain constitutional conditions, of which a febrile state, tuberculosis, and probably congenital syphilis, are the chief, but evident cachexia is not essential.

Diagnosis.—This is not difficult; with or without a history of varicella, the occurrence of numerous gangrenous ulcers in a young child, or even of deep ulcerations, beginning as pustules, enlarging, drying into a scab in the center, and then ulcerating, form a group of symptoms quite unmistakable.

Prognosis.—This is serious in proportion to the tender age of the infant, the number, extent, and depth of the lesions, the amount of constitutional disturbance, the presence of tuberculosis, pyemic, or other visceral symptoms.

Treatment.—This must be general and local, but the local treatment is the more important. Quinine in one- or two-grain doses in milk every four hours is often serviceable. In some of my cases sulpho-carbolate of soda in five-grain doses every three hours has been apparently beneficial, and my colleague Coutts had a rather severe case recover under treatment by opium. Any complications must be treated as they arise.

Locally.—I have found the best plan is to inject subcutaneously carbolic acid one in forty, near the sloughing ulcers; if the gangrenous patch is large, three or four injections round it, three or four minims in each spot, as in the treatment of carbuncle, might be necessary. This stops the extension of the gangrene and the attendant infiltration of the tissues round, and then the lesions can be treated on the ordinary surgical principles.

Wet boric lint under oiled silk until the sloughs have separated, and subsequently, if few in number, iodoform or iodol

* *Annales de Derm.*, vol. ii. (1901), p. 401, with many references.

vaselin, and washing with one in five thousand perchlorid of mercury, will keep the ulcers septic; freshly made iodid of starch paste, painted on, is another convenient application; Pasteur of London found a warm solution of chlorinated lime on lint give most relief. These measures and the administration of concentrated, or in young infants, partially digested foods, and putting the patient in the best hygienic conditions, offer most chance of success, which is almost assured if adopted sufficiently early.

Multiple Gangrene in Adults. I have seen cases in adults: one was a woman, who, after suffering from some suppurative lesion of the vagina before she came to the hospital, broke out with precisely similar lesions to those of infants, in almost all parts of the body, the lesions coming in crops. They had scarcely healed before a second outbreak occurred with a rise of temperature, and this time the face was affected and disfigured with rather deep ulcers. This, it was ascertained, was in connection with secondary syphilis. She also had xerostomia of long duration.

It has also been observed in connection with the exanthemata. One such was a man, in whom the number of lesions was small, but symmetrically distributed, the condition being produced during convalescence from scarlatina; a diphtheritic-like membrane developed on the soft palate, and was succeeded by bullæ and gangrene. Hutchinson records a case of multiple ulceration after measles, but there was molecular, not massive destruction. Osler had a case connected with malaria. Many cases have been noted in enteric fever.

Its occurrence as a complication of smallpox has already been alluded to, and Dr. M. Richards, of the City Hospital, Birmingham, wrote me an account of cases observed by him of various degrees of severity—some superficial, beginning as a ring of pus round a scab; others with punched-out ulcers with or without sloughing bases; and others again beginning as flaccid bullæ with foul contents; and it would appear, therefore, to be a possible but uncommon complication of any infectious fever.

Hallopeau and Le Damany * described a form of gangrene

* Hallopeau and Le Damany, *Annales de Derm.*, vol. v. (1894), pp. 1264 and 1349, and vol. vi. (1895), pp. 213 and 292; also Hallopeau and Leredde, p. 435.

which commences as red papules in which a yellow slough appears when the epidermis is shed. Ulceration occurs beneath it, and spreads eccentrically until the separation of the slough, when the ulcer heals slowly. These lesions may be scattered or in small groups, attack the head chiefly, but have also been seen about the chest and arms and even on the buccal and pharyngeal mucous membranes. The condition occurs in various degrees of severity. Some are superficial and heal readily; others form a deep, dry, black slough; others get deeper with great surrounding induration; while in the worst there is a spreading indurated erythema which may extend over a large area with a huge slough accompanied by suppurating, and even sloughing of the neighboring glands. Janowsky and Mourek's case, of a man, æt. forty-four, was of this kind, and the origin was traced to a fly which inoculated the back of his hand, and produced a scar-leaving pustule. Then followed pale red flattened papules with a red areola round the hair follicles and skin glands, and in these successive gangrenous sloughs formed and spread and left pigmented cicatrices.

Cases following infection with animal poisons are recorded by several observers. Waelsch's * case was traced to a foul morphia syringe: Gangrenous patches and abscesses killed a man, æt. thirty-eight years, in three weeks; a bacillus which did not stain by Gram's method appeared to be the pathogenic agent.

Hartzell † reports the case of a woman, æt. forty-six, which began with a wound made by a poisoned meat hook four years previously, and led to vaccine-like lesions such as have been described in children, which went on to gangrenous sloughs, and nothing but excision stopped them. He found abundant bacilli at the base of the sloughs, which stained only with gentian violet after Weigert's method, also staphylococcus aureus in large numbers.

In a case recorded by Rotter ‡ the gangrene developed from pustules which formed on the thigh five months after two small

* Waelsch, *Arch. f. Derm. u. Syph.*, vol. xxxix. (1897), p. 173. Abs. in *Annales*, vol. ix. (1898), p. 387.

† Hartzell, *Amer. Jour. Med. Science*, July, 1898.

‡ *Dermat. Zeitschr.*, vol. ii. (1895), p. 314. Abs. in *Annales*, vol. vii. (1896), p. 229.

sores on the prepuce and penis; gangrene of the thigh supervened. Other patches formed down the leg to the ankle and up to the scrotum and penis. The areas were large and the depth down to the fascia, and there were outlying pustules, but all healed in about seven months from the outset. Thick short bacilli were found, cultivated, and successfully reinoculated, which he called "bacillus pustulo-gangrænosus."

Hilbert * records two cases of **spontaneous gangrene of the eyelids** in female infants under one year old; a small pustule, with yellow scab, first formed without apparent cause on the upper lid, rapidly enlarged, the part beneath became gangrenous, and when the slough separated a circular ulcer, nearly an inch in diameter, was left, which healed rapidly. Both children were healthy and well nourished.

Diabetic Gangrene. Kaposi † describes a bullo-serpiginous form of gangrene which is apt to occur in advanced cases of diabetes mellitus. A few patches are formed on the limbs in successive outbreaks, beginning with bullæ on a slightly raised base; the bulla dries up in the center, and is occupied by a black crust, whilst at the periphery there is a ring of fluid pushing up the epidermis. The crust extends, and at the end of some days is detached, exposing the sphacelated skin, which, somewhat later, separates and leaves a red granulating surface. The resemblance of these lesions to the preceding forms is noteworthy. In addition to the multiple, there is a single variety in which portions of the extremities may slough completely off. Bartholow describes a case where there was gangrene of the little finger, but no mention is made of bullæ. Boyd met with a case of gangrene of the great toe, and cases of gangrene of the penis are reported by Fournier and others.

It is probable that ‡ the diabetic subject offers a favorable soil for bacilli or cocci, which lead to the gangrene, just as it does for the staphylococci, which produce boils and carbuncles.

* *Viertelj. f. Derm. u. Syph.*, vol xi. (1884), p. 117.

† Kaposi, *Wien. med. Presse*, quoted in *Ann. de Derm. et de Syph.*, January 24, 1884, with review of other skin lesions connected with diabetes. See also Quéhéry, "Thèse de Paris," 1885, abst., *loc. cit.*, 1885, p. 690.

‡ Grossmann, "Ueber Gangrän bei Diabetes Mellitus." A. Hirschwald, 1900, p. 134, further elaborates this view.

Phagedena Tropica.* *Synonyms.*—Tropical phagedenic ulcer; Aden ulcers; Malabar ulcers, etc.

We owe our knowledge of this formidable affection chiefly to French writers, especially in Cochin China and Tonkin, where it is very rife and malignant. Parke also gave a good account of it, as seen in the Emin Pasha Expedition. It is met with in tropical latitudes all over the world—Asia, Africa, the West Indies, and Central America—and, to some extent, in more temperate climates, such as Algiers and Egypt, while it is especially rife and malignant in Cochin China, Tonkin, and the islands and shores of the Red Sea. It attacks chiefly those who are under depressing influences, such as are due to malaria, privation, overfatigue, etc. Then the smallest lesion which produces a breach of continuity of the skin gives entrance to the pathogenic microbe, and a vesicle or bulla soon forms, and from this the destructive process radiates both laterally and vertically.

The disease occurs in a mild and chronic or in an acute and severe form.

A traumatic or inflammatory lesion, often trivial, is the starting point, from which either form proceeds directly or from a supervening abscess, bulla, or vesicle.

The mild form.—Boinet of Tonkin distinguishes three stages: 1. Onset and establishment of the phagedena. 2. Atonic ulceration. 3. Repair.

The affected part becomes red, painful, and swollen, and excoriated from scratching, and there is a serous or sanious discharge. The edges of the sore become swollen and indurated, and are surrounded by a dusky red areola. Spreading laterally and vertically, the borders and surface are eaten away by molecular disintegration, forming an ulcer with irregular floor covered with a grayish slough bathed in yellowish or sanious pus. When the slough is separated the inflammation becomes less active, the ulcer gets paler and may remain stationary, and gradually becomes painless, but there is still a putrid pultaceous covering on the floor.

* *Literature.*—Hirsch, "Phagedenic Tropical Ulcers," vol. iii. p. 690 Syd. Soc. Edit., with bibliography. "De l'ulcére phagédénique observé au Tonkin," E. Boinet, with references, *Ann. de Derm. et de Syph.*, vol. i. (1890), p. 210, one of the best accounts, founded on 615 cases, from which this article is largely derived. "The Ulcer of the Emin Pasha Relief Expedition," T. H. Parke, *Lancet*, December 5, 1891.

The general condition of the patient and the position of the ulcer determine the time of onset of the second stage, when there is vertical and lateral extension of the sore, with punched-out borders, which subsequently become indurated and everted, and fungating granulations spring up through the foul gray covering. There is a constant and copious serous discharge, but enlarged glands are rare except in broken-down constitutions. The third period of cicatrization may not begin for several months.

The atonic ulcer and the skin for some distance round it are almost devoid of sensibility, and Moisson says that if amputation is necessary the incisions must be made well above the anesthetic area, or the gangrene will probably recur in the stump.

The severe form is always grafted on a previous wound. The invasion is rapid, acute extensions of the gangrene recur repeatedly, and there may be dangerous complications. Gastric and slight febrile disturbances mark the period of invasion, the wound swells with or without a small subcutaneous abscess, vesicle, or bulla, which bursts and discharges a sero-sanguinolent fluid.

In the worst cases, to quote from Parke, "rapid phagedenic ulceration spreads from the seat of origin of the disease; the soft parts all yield in succession, but some much more slowly than others. An ashen-gray slough covers the affected surface; the skin and subcutaneous tissue rapidly disappear and expose the sheaths of the muscles; the muscular tissue itself decomposes more slowly; the nerves and arteries are destroyed only after a prolonged resistance; the tendons soon lose their muscular attachments, and hang about in shreds," and eventually even the bones are attacked, and the superficial layers exfoliate.

This havoc is wrought not by a continuous process, but by the frequent recurrence of acute gangrene, and the fetid sloughs are mixed with gelatiniform exudation and copious yellow serum.

The gangrene may spread into the infiltrated red edematous tissue round the ulcer, and convert it into soft, filamentous, dirty gray sloughs, like those of caustic potash. Death may ensue from the extensive ulceration, the deep burrows and irregular sinuses, or by the opening of some of the larger joints and

their subsequent suppuration. Repeated exacerbations mark the unfavorable course, while in favorable cases the discharge diminishes, the slough separates, and healthy granulation takes place. Even then, however, fresh gangrene may occur, or the ulcer may become atonic and callous, with indurated bluish-gray edges.

Cicatrization proceeds from the center to the periphery, but the sore may take from one to two years to heal soundly; for the cicatrix, while still thin, breaks down with slight friction or stretching, and if the fissures become reinoculated the whole process starts again.

The duration varies according to the age of the patient, the seat, extent, and depth of the ulcer, and the gravity of the complications, which are usually the cause of a fatal result.

The liability to slight injuries of the lower extremities, especially in bare-footed natives, explains why the ulcers generally begin on the feet, the ankle, or leg, but the thigh is occasionally attacked, and even the upper extremity has been affected, so that doubtless no part is exempt.

Etiology.—Although most common among the colored races who inhabit these hot countries, white people are also attacked, but less severely, unless pulled down by the cachexia induced by malaria, which offers a favorable soil, or by scurvy, famine, and physical exhaustion, which are also favoring factors. It is always worse in damp, malarial, low-lying districts, but it also occurs in non-malarial regions, such as New Caledonia and the highlands of Abyssinia.

The disease is propagated chiefly if not entirely by inoculation, and Boinet says the mild form is less inoculable than the severe form, because the serum, while it contains more cocci, has fewer bacilli, especially of the elongated form, which are the most virulent.

Pathology.—Boinet has found what he believes to be the pathogenic bacilli. They are aërobic, more abundant in the sloughs than in the serum, most numerous in the severe forms, sparse in the clean ulcers in the healing stage. The degree of contagion appears to be in proportion to the number of the bacilli. They also infiltrate the tissue round the ulcer, and can be found in the blood there. They are long, immovable, often straight, sometimes sinuous or undulated, are always extra-

cellular, and have a special predilection for dissociating the connective tissue fibers. He also found some smaller rods of equal thickness, but very short, with abrupt slightly rounded ends, probably derived by segmentation from the long ones. He has cultivated these organisms and successfully inoculated animals, and has furnished clinical proofs that the pus is inoculable. He thinks the water of the rice fields contains the microbe, but it cannot be the exclusive source. Blaise * has found, associated with common bacteria, some straight or curved organisms, some distinctly spiral, but he could not get pure cultures. Le Dantec † agrees with Vincent and Coyon's observations, and says it is the same as hospital gangrene. In this Matzenauer finds an anaërobic bacillus.

Treatment.—Improved hygienic conditions are most important; rest, good food, quinine, and other suitable tonics are clearly indicated. Locally, for the severe forms, scraping, the actual cautery, and various caustics are recommended by French writers, but Parke found that pure carbolic acid succeeded rapidly and perfectly, "leaving, when the slough separated, a healthy granulating surface." In milder forms the indication always is to render the sore aseptic as soon as possible. Parke found permanganate of potash most useful, and when he was hard up for that, gunpowder acted efficiently. These remedies suggest iodoform and its congeners as most likely agents. Salicylic acid, boric acid, and pyrogallic acid also have advocates. Probably, in nearly all cases, the application of strong carbolic acid, and subsequently iodoform or sublimate dressings, would fulfill all requirements. Le Dantec advocates, when the ulcer is clean, firm support to the ulcers with diachylon strips.

* "L'ulcére phagédénique des pays chauds en Algérie," H. Blaise, *Gazette hebdom. de Méd. et de Chir.*, October 10, 1897, p. 961. The patients were porters in the Madagascar Expedition.

† Abs. *Brit. Jour. Derm.*, vol. xi. (1899), p. 259.

CLASS III.

HÆMORRHAGIÆ—HEMORRHAGES.

PURPURA.

Deriv.—πορφύρα, purple.

Synonyms.—Hæmorrhœa petechialis; *Fr.*, Purpura; *Ger.*, Purpura; Blutfleckenkrankheit.

Definition.—Hemorrhage into the cutis due to disease.

Purpura must be regarded as a symptom rather than a disease, the outcome of many pathological conditions, some of which are obvious enough, while others are so obscure as to baffle investigation for the present. Some authors have restricted the use of the term to those apparently spontaneous cases in which the hemorrhages may be the only obvious symptoms, and call those hemorrhages of which the cause is known, symptomatic; but as our knowledge advances, the unknown group becomes smaller, and it is therefore more logical to consider purpura as a term synonymous with non-traumatic hemorrhage into the skin or mucous membranes.

It is, however, necessary, for the sake of making the description clearer, to treat these so-called idiopathic hemorrhages as definite varieties, which are divided into P. simplex, P. hæmorrhagica, P. rheumatica, and Hematidrosis.

Blood may be extravasated into the tissues, (1) between the layers of the epidermis, (2) into the papillæ and corium, (3) and, more rarely, into the sweat glands, hair follicles, and subcutaneous tissues.

The clinical aspect varies according to the position and extent of the extravasation, and the following terms are employed to describe the appearances thus produced:

Petechiæ, or spots beneath the epidermis, round, oval, or irregular, from the size of a fleabite mark up to half an inch or

more. They are not raised above the level of the skin, are of some shade of purple, and do not alter on pressure by the finger.

Vibices, or streaks, are long in comparison to their width, from about an eighth to one inch in diameter.

Ecchymoses, or bruises, are of any size and shape, and usually accompanied by swelling.

Ecchymomata, Hematomata, or blood tumors, due to the rupture of a comparatively large vessel, may be superficial or deep, and vary in extent, shape, and elevation above the surface.

Papules are formed when the diffusion is round a hair follicle, either independently or as a complication of other eruptions, and the names **P. papulosa** or **lichen lividus** have been sometimes employed to designate such cases. They also occur in the hemorrhagic forms of erythema, and when first formed often are of bright red tint as if ordinary inflammatory convex papules, but they do not pale on pressure.

Hemorrhagic Bullæ are formed when the effusion is between the layers of the epidermis, or hemorrhage may take place into a previously formed bulla.

Hematidrosis, or bloody sweat, occurs when the blood has escaped into the sweat follicles or ducts.

Differences are produced also when the hemorrhage occurs as a complication of other eruptions, as in herpes, pemphigus, acute circumscribed edema and other forms of urticaria, erythema exudativum, especially erythema nodosum, and ecthyma.

Petechiæ are much the most frequent of these lesions. When first formed they vary in color from a bright red to claret or deep purple, and as absorption takes place they change into the bluish, greenish-yellow, and brown tints of an ordinary bruise. They come anywhere, are never transitory, do not at any period disappear or alter by pressure, never increase in size except by a fresh hemorrhage, and are visible after death.

Purpura Simplex. This may be taken as a type of the affections to which the title of purpura is often restricted. In it apparently spontaneous hemorrhages make their appearance

suddenly, often in the night, and generally without previous symptoms. In adults the hemorrhages most frequently come first upon the lower extremities, especially the flexor aspect of the thighs and calves, but almost any part may be attacked, and in children I have seen them generally appear first upon the neck and upper part of the back, and even in the mouth. The lesions are petechial, of any size, usually roundish or oval, but may be irregular, and in rare instances, circinate (Duhring, Stelwagon). They come in crops, are usually symmetrical, but occasionally unilateral, and give rise to no inconvenience—indeed, the patient would be unconscious of them if he did not see them. The spots last until the usual changes, which occur during absorption, have been gone through, but fresh crops of petechiæ continue to appear, for a period varying from a few days to a few weeks. In exceptional cases the outbreak of purpura is preceded by lassitude, aching in the limbs, especially the calves, anorexia, and general malaise; but these symptoms are more common, though not invariably present, in the more severe forms of purpura. One of my cases, a woman æt. twenty-nine, had suffered from repeated attacks for twelve years on the lower limbs, chiefly below the knee, so that the legs were of a deep sepia tint all over. She was subject to anemia, but if she took tonics had epistaxis.

Purpura Senilis. Bateman * first described this form, which occurs only in the forearms in very old women. "It appears principally along the outside of the forearm in successive dark purple blotches of an irregular form and various magnitude. A constant series of these ecchymoses had appeared in one case during ten years, and in others for a considerable period; and in all the skin of the arms was left of a brown color." Unna has revived interest in this trivial condition, and from microscopic investigation concludes that it is primarily from diapedesis, but slight traumatism, *e. g.*, scratching, may lead to more extensive hemorrhage by rupturing the vessel.

Purpura Hæmorrhagica (land scurvy, or morbus maculosus Werlhoffii) may be regarded as an exaggerated P. simplex, and

* Bateman's Atlas, 1828, Plate XXX., and Unna, on "Purpura Sénile," Maladies Cutanées, vol. v. (1896), p. 129 (Translation).

is often preceded, in addition to the above symptoms, by headache, great debility, joint pains, which are sometimes severe, and convulsions. On the other hand, there may be no symptoms at all before the hemorrhages, or P. simplex may develop into this form. The lesions present every variety of aspect; beginning upon the legs and lower part of the trunk, they rapidly involve, by successive crops, the whole of the body surface. Sooner or later the hemorrhages occur internally, especially from mucous membranes and into the parenchyma of organs and various cavities, and epistaxis, hemoptysis, hematemesis, or hematuria may ensue, so profusely as to rapidly undermine the strength of the patient, and lead to speedy death by exhaustion. The fatal event may also be produced by the position of the hemorrhage, *e. g.*, in the meninges, or brain substance. On the other hand, the bleeding may be more moderate and continue for a few weeks, or may cease altogether in about a fortnight, either abruptly or gradually, the general health being affected in proportion to the amount of the hemorrhage.

There are also cases of purpura with elevation of temperature, or P. febrilis, but probably they are not all of the same nature, as in some the fever precedes, and in others follows, the purpura; in the latter case, possibly due to the absorption process, and where the fever occurs in the latter stage of P. hæmorrhagica, Immerman suggests that it may be due to the anemia. Some authors limit "Werlhoff's disease" to cases in which there are violent hemorrhages without any other symptoms or traceable cause, but this is an artificial division.

Peliosis, or **Purpura Rheumatica**, is described with the exudative erythemata, with which it agrees in all its characters, except the hemorrhages, which have in rare instances developed into P. hæmorrhagica. See also *Erythema Hæmorrhagicum.*

Hematidrosis is described with diseases of the sweat glands.

Etiology.—Purpura occurs in both sexes and at all ages. The causes of cutaneous hemorrhages are very numerous, and may be classified under five heads:

1. *Certain blood alterations.*—(*a*) Specific fevers, especially typhus, variola, hæmorrhagica, and epidemic cerebro-spinal meningitis; less often, typhoid, measles, scarlatina, acute septi-

cemia, pyemia, and syphilis, both congenital and acquired, some forms of pneumonia, probably from pneumococci; Sansom records a case which followed influenza; (*b*) snake-poison; (*c*) some drugs, as iodin, iodid of potassium, quinine, salicylic acid, copaiba, belladonna, ergot of rye, chloral, chloroform inhalation in the early stage, benzoic acid inhalation, phosphorus, mercury, and the mineral acids. Purpura is produced by drugs such as the above only where there is an idiosyncrasy in the individual; various toxins may produce it, antidiphtheritic serum injection, general gonorrheal infection, etc., (*d*) certain general diseases and cachexiæ, as scurvy, hemophilia, leukocythemia, pernicious and other anemias, rickets (scurvy-rickets); cancer, sarcoma, and tuberculosis; the last is rather rare, but purpura may precede, occur in the course of, or towards the termination of phthisis or of general tuberculosis.*

2. Many diseases of the *viscera*, including some of those of the spleen, liver (especially cirrhosis † and chronic jaundice from any cause), intestines, kidney, and especially from chronic Bright's disease, but also from acute nephritis; the lungs, especially pneumonia, and the cardio-vascular system, acting probably and mainly through the sympathetic. Some of these visceral changes may act by allowing micro-organisms or their toxins to enter the blood stream.

3. *Want of support to the vessels*, due to (*a*) relaxation of the tissues, as in old age, getting up after long illnesses, parturition, etc.; (*b*) the existence of other eruptions, especially bullæ, wheals, etc.; (*c*) diminished atmospheric pressure.

4. *Sudden changes in the circulation*, as in purpura of the newborn **(P. neonatorum).** Herbert Spencer ‡ has shown that visceral hemorrhages, especially into the supra-renal capsules, are very frequent in stillborn infants, but they are chiefly due to external mechanical causes, and are not true purpura.

5. *Diseases of the nervous system.*—(*a*) Functional, as in connection with shock, grief, epilepsy, angina pectoris, and other neuralgias; (*b*) organic, as in tubercular meningitis, plugging of

*Abs. of a paper by E. Cohn in *Brit. Jour. Derm.*, vol. xiv. (1902), p. 79. gives several quotations and references.

† In an alcoholic cirrhotic patient of mine hemorrhage into the skin of the face and hemorrhagic bullæ on the soles preceded death by a few days.

‡ "Trans. Obst. Soc.," vol. xxxiii., 1891.

cerebral sinuses and some other serious lesions, also in posterior myelitis, injuries to nerves, etc.

Among all this long list of causes, in only a few, viz., the first three specific fevers, and scurvy, hemophilia, and snake-poisoning, can cutaneous extravasations be considered a common event. And as they are only a part of many other hemorrhages and lesions, they are not usually spoken of as purpura. In most of the others it is quite exceptional, while in a great number, perhaps the majority, of cases of purpura, the cause is more or less obscure.

Pathology.—The evidence grows rapidly as to the importance of toxins, whether of bacterial or other origin, in the production of probably all the severe forms of purpura and of many of the milder forms.

Oddo and Olmer after extensive investigations conclude: That while purpura may occur without recognizable visceral lesions, they are frequently present, before, during, or after the purpura.

The antecedent diseases are either (*a*) those which determine the mode of entry of infective material, generally bacterial, into the circulation, such as bronchitis, pneumonia, enteritis, or tonsillitis; or (*b*) those which produce the purpura by auto-intoxication or alteration of nutrition, such as diseases of the liver and kidneys, especially cirrhosis and nephritis. Cardiac disease, another factor, they think, acts through the liver and kidneys. The kidneys and liver (as in acute yellow atrophy) and gastro-intestinal canal may also produce toxic infection, which predisposes to what they call the cachectic purpuras. Some cardiac, pulmonary, and splenic diseases, and meningitis and myelitis also, play a part in this form. The only visceral sequel of purpura besides those due to hemorrhages into them is Hanot's * hypertrophic cirrhosis of the liver with intense pigmentation.†

The evidence on which the bacterial origin of many cases of purpura rests is (1) on its occurrence along with recognized bacterial diseases, (2) on its occurrence in groups, and in a few cases (3) the actual discovery of organisms in the blood. Thus it

* *Archiv Gén. de Méd.*, February and March, 1900. Abs. *Brit. Med. Jour.*, May 12, 1900.

† A good example by Apert, *Bulletin Médicale*, July 10, 1898, p. 665. Also in "Thesis," 1897, Apert discusses pathogeny and varieties of purpura

is known to occur with acute specific diseases. Groups of cases have occurred among soldiers in barracks and in schools.

Bacteria or micrococci have been found blocking vessels beneath purpuric patches by Cohnheim, Cornil, Watson Cheyne, Letzerich,* Cassel, Wilson, etc. Pneumococci have been found by Glaisse, Ch. Levi, etc. Streptococci were found in the blood of a case under Cureton,† of the Salop Infirmary. Michel-Dansac found the bacillus coli in the spleen and blood in a case which supervened on leukocythemia. The anthrax bacillus, the bacillus pyocyaneus, and the staphylococcus aureus and albus have been found by different observers. That the intervention of bacteria is not always necessary is shown by its occurrence after diphtheria anti-toxin and by Weir Mitchell's experiments with snake-poison, in which contact of the poison with the vessels produced weakening of the vessel walls, and rupture in a few minutes, which was general in distribution, when the poison was absorbed. Another illustration of the rapidity with which animal poisons produce purpura is a case by Mason,‡ in which a man was taken with hemoptysis six hours after an abrasion by a sheep's foot, and in twenty-two hours there was hemorrhage everywhere. Bacilli were found.

Graham Little § has collected eleven cases in which severe purpura was associated with hemorrhage into the supra-renal capsules, and was enabled to demonstrate streptococcus pyogenes in the blood-vessels in two of his own cases. He explains this by deducing, from the supposed physiological action of the suprarenal capsules, that the first result of the arrest of suprarenal secretion would be dilatation of the blood-vessels and diapedesis, especially where the surrounding tissues were lax. Rapidly fatal cases of hemorrhage into the suprarenal capsules without purpura are also on record. Of the different micro-organisms found in the blood in a considerable number of cases, streptococcus pyogenes was the most frequent.

* *Ætiol. u. die Kenntniss. der Purp. Hem.*, with plate (Vogel, Leipzig, 1889). He claims to have found a specific bacillus, and thinks the liver is the chief organ of dissemination.

† *Lancet*, February 25, 1899, p. 515.

‡ *Australasian Med. Gaz.*, May 20, 1898, p. 203.

§ Purpura with hemorrhage into the suprarenal capsules. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 445, gives good review of micro-organisms found in purpura and many references.

The mechanism of purpura * varies greatly. Blood may escape from the vessels by rupture, diapedesis, or by transudation of blood-coloring matter only, but there is no doubt that, in the majority of cases, rupture of the vessel takes place. This may occur from:

(*a*) *Increase of blood pressure* behind the point of rupture, especially if suddenly produced. The commonest cause of this is some obstruction in a vessel, produced by (1) stasis, either from inflammation in the part, or from some external pressure; (2) thrombosis or embolism, which may be due to an ordinary blood clot, masses of leukocytes, as in leukocythemia according to Ollivier and Ranvier, sarcoma cells, hematin, fibrin, colonies of bacteria or micrococci, or masses of endothelial cells from desquamative arteritis, as described by Hayem. The extravasations produced by all these blocking particles would thus be hemorrhagic infarcts. Extreme contraction of the vessels on the one hand, or dilatation on the other, either from active or passive congestion, may also lead to rupture of vessels.

(*b*) *Changes in the vascular walls*, from inflammation or degeneration, *c. g.*, lardaceous (Wilson Fox), acting either by weakening the resistance of the vessel wall or by favoring obstruction; want of support to the vessels being a predisposing condition, and the position of the lesions being often determined by gravitation.

(*c*) *Changes in the nervous system* acting by producing (*a*) alterations in the caliber of the vessels, and (*b*) alterations in the nutrition of the vessel wall. Schwimmer thinks that purpura is always a tropho-neurosis, but this is overstating the case.

The influence of the sympathetic has been shown by the destruction of the sympathetic ganglion in the abdomen of a frog being followed by hemorrhages in the lower limbs; and Hale White † found acute inflammation of the semi-lunar and cervical sympathetic ganglia in a case of purpura hæmorrhagica. It is probable that toxins act through their influence on the nervous system.

It is only through the influence of the nervous system that we can explain such cases as Mitchell's, of neuralgia with extrava-

* Sack, *Monatsh. f. Derm.*, vol. xx. (1895), and Unna's "Histopathology" may be referred to.

† *Med. Chir. Trans.*, vol. lxviii. (1885), p. 231.

sations at the point of greatest pain, the purpura recurring with the pain repeatedly; those following injuries to nerves in the area of the nerve affected, cases occurring after severe chills, those in association with ague, and in the early stage of chloroform inhalation, even when there has been no struggling (Morel-Lavallée). It is, however, generally impossible to determine how much is vaso-motor and how much is trophic, or whether there is a combination of the two. The same difficulty exists also for other pathological conditions producing purpura. It is not always possible to say into which category any particular case should be placed, either because more than one theory would fit the facts, or from there being a combination of causes present. Apert * has tried to divide purpuras clinically according to their pathogenesis. Those due to toxins, especially in the blood, are peliosis rheumatica or exanthematic purpura; (2) microbic emboli, so-called infectious purpuras, with discrete petechiæ and severe general symptoms; (3) pathogeny unknown: Werlhoff's disease with copious hemorrhages and no other symptoms. Besides these are secondary cases and mixed types.

Hayem found a diminution of the hematoblasts, which play an important part in the clotting of the blood and arrest of bleeding; but the pathological changes found in the blood have been so diverse, and are individually founded on so few observations, and those open to fallacy, that they need not be discussed further.

Diagnosis.—P. simplex has to be distinguished sometimes from *erythema exudativum* and from fleabites. The fact that the purpura spot is unaltered by pressure distinguishes it at once from ordinary erythema exudativum, which it only resembles when the purpura is of a brighter color than usual. The later stage of *flea and bug bites* is exactly like the petechiæ of disease; but the bites do not come suddenly in crops, have a ring of congestion round them at the commencement, and a central punctum is discernible for the first few days.

Purpura hæmorrhagica may be confused with *scurvy*, but absence of vegetables in the dietary is never an etiological factor in P. hæmorrhagica, while the distinctive premonitory symptoms—great prostration, frequent faintings, swelling of the gums,

* *Loc. cit.*

loose teeth, and the condition of brawny swelling of the limbs—are always present in a well-marked case of scurvy. The hemorrhages of *hemophilia*, *leukocythemia*, and *pernicious anemia* are distinguishable from P. hæmorrhagica by the symptoms of those conditions being associated with the hemorrhages.

Prognosis.—The majority of cases terminate favorably, but the duration is very variable, and, as we have nothing to guide us as to what course the case will pursue, even an apparently P. simplex sometimes passing without assignable cause into P. hæmorrhagica, it is well to be guarded in prophesying the termination.

Treatment.—Rest in the horizontal position is one of the most important precautions, and should be rigorously insisted upon in all cases except the slightest. In P. hæmorrhagica every effort should be made to support the strength from the first, by nourishment in an easily assimilable form, but diet has no direct influence upon the hemorrhage. The drugs upon which most reliance can be placed are turpentine internally and by inhalation, the liquid extract of ergot, and subcutaneous injections of ergotin, chlorid of calcium, sulpho-carbonate of soda, intravenous injection of perchlorid of mercury: and of these turpentine is one of the best; ♏xv to ♏xx ter die is the dose. Poulet strongly advocates nitrate of silver gr. 1-8 to gr. 1-6, made into a pill, and taken three times a day, while perchlorid of iron, quinine, and general astringents have their advocates.

Sansom gave ℥ss doses of sulpho-carbolate of soda every four hours in two severe cases, and attributes recovery to the drug. Wright's experiments with chlorid of lime on increasing the coagulability of the blood has led to its employment in purpura, and, it is said, with most satisfactory results. Thirty grains three times a day is the usual dose, but large doses may be given. A full diet, it is said, aids its action. Lusignoli injected perchlorid of mercury 1 in 1000 intravenously with marked effect. Alexeier gave fresh bone marrow of a calf, crushing the bone in tepid water. The patient took ℥jss a day of the liquid, which was first filtered and then mixed with milk. The hemorrhage ceased. Shand of Glasgow records a case in the *Lancet* of July 9, 1879, where faradization of the whole surface seemed to have been effectual. Shoemaker recommends ℥ss doses of the fluid extract of hamamelis virginica. Adrenalin might be

tried. From what we already know of its pathology it is not surprising that all remedies fail in some cases, and it is well to have several alternative remedies. Ice, internally and externally, is sometimes useful, and local astringents may be employed in severe cases; a four per cent. solution of hydrochlorate of cocain, painted on, stopped a severe hemorrhage from the gums when other hemostatics had failed.

Where hemorrhages are due to a general condition like scurvy, the treatment for such a condition would be demanded.

Slight cases require no treatment.

CLASS IV.

HYPERTROPHIÆ—HYPERTROPHIES.

This group includes all kinds of abnormal increase generally produced by the increased number of cell elements of the whole, or any part, or combination of parts, of the skin structures. There may be real overgrowth or only an accumulation of the cell elements, which are the "stasis tumors" of Unna.

Thus, the epidermis may be affected exclusively, as in callosities; while in a wart, or other papilloma, the papillæ are involved as well; or only the pigment of the epidermis may be increased, as in chloasma or lentigo; or again, there may be increased growth of hair, as in hirsuties; or of nail, as in onychogryphosis; or of all the tissues, as in elephantiasis. This overgrowth generally takes place without any signs of inflammatory effusion, but in sclerodermia there is effusion of cells round the vessels, though, even then, it is not demonstrably inflammatory; whilst in elephantiasis inflammation plays the chief part in its production.

Hypertrophy, therefore, is the outcome of many different pathological processes, and is a result rather than a cause of disease.

ICHTHYOSIS.*

Deriv.—*ἰχθύα*, fish skin, from *ἰχθύς*, fish.

Synonyms.—Xeroderma ichthyoides; Ichthyosis vera; Fish-skin disease; *Fr.*, Ichthyose; *Ger.*, Fischschuppenausschlag.

Definition.—A disease of development with deficient skin secretions, characterized by extreme dryness of the skin, and more or less formation of scales, epidermal plates, and warty-looking growths.

* Illustrated in Author's Atlas, Plate XLIII., Ichthyosis Simplex, XLIV. Figs. 1 and 2, and XLV., Ichthyosis Hystrix, XLVII., Ichthyosis congenitalis, of moderate intensity, the child surviving for some weeks. "Harlequin Fetus" is either still-born or lives a few short hours or days.

Varieties.—Ichthyosis in one or other of its forms is a fairly common disease, but varies immensely in its development. Three clinical types may be recognized; the first two are general, and are called xerodermia and ichthyosis simplex; the third, ichthyosis hystrix or hystricismus, is more or less localized. All the varieties are usually of congenital origin, though rarely recognizable till some weeks or months after birth, and it is not until the second year or later that it becomes very conspicuous. The term ichthyosis congenita is reserved for the comparatively rare cases in which there are defects at birth.

Acquired ichthyosis in appearance is indistinguishable from the others, but it is nearly always secondary and seldom general. Xerodermia and ichthyosis simplex are not really distinct, the milder being connected by every gradation with the more severe form, but their separate consideration is convenient for clinical description.

Symptoms.—**Xerodermia** is the commonest and mildest form. In a marked case the skin is rough, dry, and dirty-looking, with the natural lines more marked than usual, from the thickening of the epidermis. The roughness is produced by slight furfuraceous scaliness, and also by the prominence of the hair follicles, produced by the condition known as **keratosis pilaris**, which is always present, often in a high degree, on the extensor surface of the limbs and trunk. Xerodermia may be present in so slight a degree that the patient is not aware of it, but such persons do not perspire, and their skin "chaps" and is more vulnerable to slight irritation.

In **ichthyosis simplex** the whole surface has a tesselated appearance, from being covered with large angular, dirty-white finely corrugated, papery scales, which are adherent, and therefore slightly depressed in the center (**I. scutellata** of Schönlein), while the edges are detached, transparent, and shining (**I. nacrée** of Alibert, or **I. nitida**). These and the following variations are often most characteristically seen on the leg near the knee and ankle, the upper part being often very glistening, or even pearly white, while the thick scales are seen lower down. In still higher grades the scales adhere together to form thin plates, and being of a greenish tint, look something like a serpent's skin (**I. serpentina**; when there are still thicker plates, the appearance of a crocodile hide is produced (**I. sauroderma**). The older the

plates the darker they become, so that they may vary from olive green to black **(I. nigricans).** While all these fanciful names are to be met with in literature, and are therefore explained, their use should be avoided, as they only produce confusion. These extreme conditions are rarely extensive, and usually only occupy certain regions, a milder form prevailing elsewhere; for, although a universal disease, it is unequal in its severity in different regions, and is always more developed on the extensor surfaces, especially over the tips of the elbows and knees, where it may attain to the higher condition of warty growths or plates, even when the disease is moderate elsewhere.* On the other hand, the flexures are comparatively free, often appearing quite normal; the limbs are worse than the trunk, and the legs than the arms; the palms and soles are not much affected, but are harder and smoother from the absence of the small natural lines, while the major ones are deepened.† The hair is dry, harsh, and dull-looking, and the scalp branny; the nails may be pitted and brittle; while the face, though relatively less affected, is rough and very often eczematous. In bad cases there may be a reduction in size of the ocular slit, or ectropion, from contraction of the dry skin, and atrophy of the lobes of the ears. Unna says there is never ectropion except in I. congenita, and that the face is unaffected. In a case of my own the first sign was a roughness on the forehead when three weeks old, and it was then shown at the Dermatological Society. Six years later it was again shown with well-marked xerodermia. Also, in a case of Kaposi's,‡ the face was extremely affected and the eyelids contracted.

Itching is frequently experienced, especially when the clothes are taken off, but it is never severe unless eczema is present, to which the ichthyotic skin is very liable when exposed to cold, and also to painful fissures or "chaps" from the same cause. The fully developed ichthyotic skin does not perspire sensibly, but some sweat may be seen in the flexures, especially the axillæ, on exertion or in very hot weather, and occasionally on the face, palms, and soles. In one of my cases there was con-

* Plate LI., Fig. 2, Author's Atlas, illustrates this.

† The rare condition sometimes called Ichthyosis palmæ, is described under Keratosis Palmæ.

‡ *Ann. de Derm.*, etc., vol. vi. (1895) p. 686. Report of Vienna Derm. Soc.

stant hyperidrosis on the palms and soles, with occasionally moisture on the back of the hands and forehead, while there was a high degree of ichthyosis on the rest of the body. The patients feel much relieved by any perspiration, and their condition is notably ameliorated in the summer.

The sebaceous secretion is also deficient, though not wholly absent, for the horns and plates have often a greasy feel, and ether will dissolve out a good deal of fluid fat and stearin. Though the patients are always thin, the general health is good as a rule. Asthma is said to be a frequent concomitant, though very few instances of such an association have fallen under my notice. The ordinary form of the disease tends on the whole to get worse, rather than better, as the patient grows up, though there may be some remissions, according to the season and to the amount of attention given to the skin. After full adult age is reached some improvement appears to take place in cases of moderate severity.

Acquired ichthyosis is rare, especially generalized cases. In one of my patients it came on when seventy-six years old after a period of poor living, became universal, and remained without change until his death, six years later; he resembled a typical ichthyosis * of the ordinary form. This patient sweated freely until the disease came on. Another man, æt. thirty-six, with marked ichthyosis all over, except the face and upper part of the neck, which sweated freely, stated that his skin was quite smooth up to the age of thirteen, when it became rough after scarlet fever. A third began at sixty-four, and was well marked; he suffered from habitual looseness of the bowels, four or five motions a day. Tommasoli's case began at the age of seventeen years. Mapother's case was a woman of forty-two; the disease came on while suckling; the axillæ, groins, and breasts perspired, but there were horny plates on the limbs, and the general surface was xerodermatous. A few other cases are scattered through literature. In the Sandwich Islands an acquired ichthyosis is common in those who chew the sialogogue piper methysticum to make "ava." Somewhat more common are local ichthyotic developments, especially in connection with neuritis from injury or disease; and Ballet and Dutil have observed it in tabetics. But Unna and others refuse to regard these as ichthy-

* Author's Atlas, Plate XLIII.

osis, Unna calling them "stagnation keratoses," classing them with the indurations seen in association with varicose ulcers and elephantiasis nostras.

Ichthyosis Hystrix is much rarer, and differs in so many ways from the other congenital forms that many regard it as a totally different affection, but there are connecting links with the commoner variety. Lennhoff in 1893 showed at the Berlin Dermatological Society four sisters: two had slight xerodermia, one well-marked ichthyosis, while the fourth showed a transition to I. hystrix. It is never general, though it may be widely distributed, and occasionally certain parts may be in the hystrix condition, while the rest of the skin is xerodermatous, but in the majority of cases the intermediate skin is perfectly healthy; moreover, the disease is seldom symmetrical, is often unilateral,* and sometimes sharply limited on the trunk by the median line. It is usual to see it in lines running longitudinally on the limbs and transversely on the body. The face is rarely affected, or only in a minor degree.

The lesions vary from small pin's-point-sized, papillary growths covered with a horny cap, which forms a nail-head-like prominence on the skin, up to warty, dark greenish, vertically striated, horny masses, projecting half an inch or more above the surface, with a wide base, and truncated, conical shape, like limpet shells. When the horny part is soaked or pulled off, hypertrophied papillæ are brought into view. Inconvenience is only experienced when the growths are in awkward positions, such as the palms and soles, on which one or more bands are common, or when the horny tops are torn off too roughly by catching in the clothes, etc.; but they are often shed spontaneously without any pain.

The extreme instances of widespread horny growths are sometimes exhibited at shows as "Porcupine men," as in the well-known Lambert family, in which it existed in nine males of three generations. The warty projections of the first affected were cast off periodically.

Ichthyosis Hystrix Linearis is the minor degree† where

*This is so in my Atlas case; but, as frequently happens, there are some patches on the left limb as well as the right.

†An interesting series of illustrated cases was published by Stephen

only a single tract is involved. It is reported from time to time under various names, according to the fancy of the author, *e. g.*, nævus verrucosus, nævus papillaris, nævus neuroticus unius lateris, nerve nævus, neuropathic papilloma, papilloma neuroticum, etc. This form is rarely hereditary. Many authors deny that these cases belong to ichthyosis hystrix. The proofs that they do lie in the facts that the individual lesions are exactly similar to what may be found in acknowledged cases of ichthyosis hystrix; and as regards distribution, there are all grades, from a single line to the widespread unilateral forms previously described.

Unna * is very strongly against their identity, but he restricts I. hystrix to cases with horny outgrowths on the plates of the higher degree of I. simplex, and in which there is a general ichthyosis. This, I think, is too narrow a view, and not in accord with clinical experience. Morrow † also differentiates them.

The anatomical cause of this linear distribution is much disputed; for a long time it was almost an axiom that it was in the course of cutaneous nerves, but close investigation showed that it did not always correspond with single nerve territories, and it was suggested that the lines of Voigt, *i. e.*, the boundary lines of the nerve territories, governed the distribution. Others said that it followed the lines of cleavage of the skin (*vide* p. 45); a fourth theory was that it was in the course of the blood-vessels; fifth, that it corresponded with the metameric segments of the body; and, sixth, that it corresponds with the embryonic sutures and follows the direction of growth of the tissues.

D. W. Montgomery,‡ after arguing out the question, came to the conclusion that the sixth theory is the correct one, but in

Mackenzie in the *Illust. Med. News*, November 3, 1888, p. 123. See also Phillipson's two cases setting forth Unna's view, *Monatsh. f. prak. Derm.*, vol. xi., 1890.

* Unna's *Histopathology*, p. 332.

† Morrow's article is in *N. Y. Med. Jour.*, January 1, 1898, with chromo lithograph. He calls these lesions systematized or linear keratosic nevus, but such a name would fit equally well the more extensive I. hystrix.

‡ D. W. Montgomery, "The Cause of the Streaks in Nævus Linearis," *Jour. Cut. and Gen.-Ur. Dis.*, vol. xix., 1901, October; numerous references.

my opinion no one theory is applicable to all cases, and each should be studied on its merits.

Two instances of mental weakness associated with very extensive cases have come under my notice, and other congenital

Fig. 27.—Ichthyosis hystrix. × 120.

The horn has fallen off in preparing the specimen, but the horny layers can be seen at *a*, dipping down into the interpapillary part of the rete, which goes deeper than natural into the corium and produces enlargement of the papillæ.

defects are occasionally observed. Of these defects of the ear are most frequent.

In an unique unilateral case of Dr. Church the mucous membrane of the cheek, soft palate, and tongue was affected on the same side with papillary growths.

Thibierge * also reports a case in which the buccal mucous membrane was corrugated like a scrotum; it was of opalescent tint. The tongue was similarly but more slightly affected. There was a high degree of general ichthyosis. But for these exceptions it might be said that ichthyosis never affected the mucous membranes, the so-called **"ichthyosis linguæ"** being an acquired affection of a totally different origin.

* *Annales de Derm.*, etc., vol. iii. (1892), p. 717.

I. hystrix * develops quite early, as a rule, six weeks or two months being a common period for it to be first noticed, but it too may be present at birth.

Anatomy.—The morbid anatomy of ichthyosis hystrix has been investigated by Kaposi and myself. Kaposi's observations are quoted in every text-book, so I will give my own only. They were made on some warty-looking growths upon the flexor surface of the forearm, from a highly developed case.† The papillæ and their vessels were much enlarged, the Malpighian cells adjacent to the papillæ were normal, but, instead of the layers of intermediate cells, which in health fill, or, so to speak, level up, the interpapillary spaces, and so form a nearly plane surface, on which the horny layer rests, the strata of horny cells dipped deeply down into the interpapillary spaces, so that the hyperplastic corneous layer followed the outline of the papillary layer, with a comparatively thin layer of rete cells intervening. The horny cap consisted of closely adherent, stratified layers, with large spaces interspersed here and there. Each of the vertical columns sprang from a separate papilla. This description differs from Kaposi's, who figures the rete as almost unaltered in its outline. Some sections did not show this dipping down of the horny layer to so great an extent as others, and so approached the condition which Rindfleisch describes as appertaining to ordinary warts, and which he thinks distinguishes them from the ichthyosis hystrix condition; but this is only approximately true, as the horny layer in many warts does to some extent follow the outline of the papillary layer. Unna's views have been referred to already.

Ichthyosis Congenita. Either after the removal of the vernix caseosa, which may be very thick, or, as the skin dries, it is noticeably red, smooth, and shining at first, but soon becomes dry and rough; or, more rarely, actual plates are present in the most severe cases, constituting the so-called "**Harlequin fetus,**" of which there are specimens in University College, Guy's Hospital, the London Hospital, and the Royal College of Surgeons' Museum. The whole surface of the body is thickly covered with fatty epidermic plates, some a sixteenth of an inch in thickness, which are broken up by horizontal and vertical fissures, and arranged transversely to the axis of the body, like a loosely

* Duckworth, in *St. Bart.'s Rep.* for 1873, p. 108, reports a case of I. hystrix, in which there were red spots at birth, and in three days there was "heaping up" upon them. Hutchinson, in his "Lectures on Clinical Surgery," vol. i. p. 161, relates a case where there were plates at birth and the child survived.

†*Clin. Soc. Trans.*, vol. xii. p. 181, with plates.

built stone wall. These fissures, after birth, may extend down into the corium, and produce much pain on movement. Owing to the stiffness of the skin, and also often from its contraction, the eyes cannot be completely opened or shut, and there may be ectropion; the lips are too stiff to permit of sucking, and are often everted; the nose and ears are atrophied; the toes are contracted and cramped; and the child, if not born dead, soon dies from loss of heat and starvation.

Where the disease is less severe the child may survive for some time. In February, 1890, a male child, one month old, with ichthyosis, was admitted under me at the East London Hospital for Children. The condition was present at birth. The child was fairly well nourished and well formed, except the ears. The whole skin was dry and hard, as if painted with a thick coating of collodion, which was broken up into large thin plates by deep sulci, which followed the natural folds. The surface of the plates was quite smooth and parchmentlike. The child lived three months, but its vitality was low all along. Hallopeau had a similar case. Plate IX. of Hebra's Atlas is also of this type, and so are two cases of G. T. Elliot of New York, and a case by Graäs and Török. In Róna's case, there were discrete reddish spots soon after birth which enlarged, in a few weeks there was exfoliation, and at two months there was collodionization and constant desquamation. The child died at four months, having previously had cutaneous suppurations. A child of the same parents, æt. eleven years, showed the disease at three months which increased to a severe condition.

All these cases are considered by Hebra and Kaposi to be due to **general seborrhea**, and not to ichthyosis (I. sebacea). With this I cannot agree. Mr. Sutton* was kind enough to give me some skin from his case, and I found enormous thickening of the horny layers (mixed with fat), which dipped down into the interpapillary part of the rete, just as in ichthyosis hystrix. This part of the rete exhibited considerable increase, both vertically and laterally, so that the papillæ were proportionately elongated and narrowed, and almost filled with vessels, which were dilated both here and at the upper part of the horizontal layer. In the scalp the hairs went straight at first, but were lost eventually in the

*Shown at the *Med. Chir. Soc.* March 8, 1886, and published in "Transactions" of that year, vol. lxix. p. 291, with colored plate and bibliography.

horny plates. The sebaceous glands were poorly developed, some only consisting of a single narrow acinus, or a very small gland with four or five acini. There were very few sweat glands in this case, but Caspary in his described them as large and numerous. The anatomy certainly resembles that of ichthyosis, and I consider it a true ichthyosis congenita, due to a defect in the keratinizing process in the rete.

In the collodionized infant above referred to the conditions were great and nearly uniform thickening of the homogeneous horny layer, which dipped into the infundibular follicular orifices, but did not line them in the same way as in the "harlequin fetus." The stratum granulosum was well marked, the rete apparently normal, except that the basal cells were not differentiated as much as usual. There was scanty lymphocyte infiltration in the papillary layer, but the papillæ were not enlarged. Hairs were present in twos or threes. The sebaceous glands were rudimentary, while the sweat coils were abundant and well developed. In the fat layer the nuclei of the cells were conspicuous. Unna considers the condition quite different to ordinary ichthyosis, calls it **hyperkeratosis universalis congenita,** classes it as a stagnation tumor, and says that "all the histological phenomena may be ascribed to one cause, viz., to a firmer connection of the epithelium mainly limited to the surface," and that the skin is therefore too small for the body, hence the fissures described on the surface and the ectropia and contractions. His other distinctions from ordinary ichthyosis are as follows:

In ichthyosis ectropion and contractions unknown. (This is incorrect.) Ichthyosis has definite regions of predilection. The palms and soles are never affected, and the face and neck rarely. (This also is incorrect as an absolute statement.) In ichthyosis the affected areas are dry, and it is difficult to induce sweating. In I. congenita the hydrosis is normal. The anidrosis of Caspary's case, he says, is exceptional. (In my second case also there was anidrosis, although the sweat glands were well developed.) The follicular apparatus of the skin in ichthyosis is normally developed, but plugged in I. congenita atrophic or absent.*

Many of these distinctions break down on closer examination. Bowen considers that there is a special layer of cells analogous to the epitrichial layer of certain animals which is present in a three-month's fetus, but normally disappears at the seventh month, but in the "collodionized" forms of ichthyosis congenita it persists after birth.

Riecke's † recent observations on two old museum specimens at Leipzig lead him to conclude that I. congenita is a developmental anomaly *sui generis*. The pathological changes are excessive formation of aggregations of horny cells, as in ordinary ichthyosis, with marked cornification about the hair follicular orifices. The development of the stratum granulosum, rete, and papillary layers are practically normal. He disputes the statements of Unna and others that the number of hairs, sweat and sebaceous glands are abnormally high or low.

* "Histopathology," p. 1157. Some references.

† E. Riecke, "Ueber ichthyosis congenita," *Archiv f. Derm. u. Syph.*, vol. liv. (1900), p. 289, with colored illustrations and many references,

G. Finizio,* on the other hand, found the stratum granulosum absent, the rete with exaggerated proliferation of variable thickness, the papillæ large, numerous, and richly vascularized, the derma with abundant lymphoid infiltration, the sebaceous glands well developed, and the sweat coils normal. Hans,† while preferring Unna's title, asserts that it is a true ichthyosis. It is obvious, with these conflicting statements, that dogmatic assertion of the nature of the condition is out of place.

Etiology.—The disease is congenital, and in many cases, but by no means in all, hereditary. The heredity may be direct, may skip a generation, or may be through a lateral branch. Sometimes only one child in a large family will have it, at another several children: even in the case of the "Harlequin fetus," two, and even three infants have been born of one mother with this deformity. The disease often keeps to one sex in a family, which may be either of the same or of the opposite sex to the affected parent. Thus, I have met with a family of seven girls and three boys, the boys being the youngest, in which the disease affected four of the girls alternately, beginning at the eldest, and also the eldest boy, the father having the same condition. Kaposi records the instance of an ichthyotic mother who had all five sons ichthyotic, while her three daughters were free. This tendency to attack only one sex in a family is also seen in xerodermia pigmentosa, a totally different disease; but taken as a whole, both sexes are equally liable to ichthyosis, and no class is exempt. There is no other known cause for the congenital affection, but the neuritic and tabetic origin of the local acquired form has been alluded to; while one of my general acquired cases was due to semi-starvation, and another was apparently from chronic diarrhea. Lutz says that in the Sandwich Islands the long use of "ava," a fermented liquor from *piper methysticum*, produces the appearance of well-marked ichthyosis with some atrophy; while the immediate effect of a debauch of it is stupefaction, followed by copious perspiration.

Pathology and Morbid Anatomy.—Most authors consider that there is some congenital defect in the development of the cutis, chiefly of the epidermal layer, but according to Unna, the de-

* G. Finizio, *La Pediatria*, No. 3, 1900. Abs. *La Presse Médicale*, April 27, 1901, p. 199.

† Abs. of Hans and Daniel and Bordier's case, *Brit. Med. Jour. Supp.*, July 20, 1901.

fect is acquired, and he only admits a congenital predisposition, and regards it as "an infectious hyperkeratosis tending to parakeratosis," and compares it to pityriasis rubra pilaris, and psoriasis; in short, that it is a low form of inflammation, shown by the constancy of an increase of cells, with a tendency to moist catarrh, which he would not admit to be eczema, but regards as a simple increase of the always present, but latent inflammation. At present this view is only held by his own pupils.

Histologically Unna finds the horny layer thickened (the nuclei being absent), at the expense of the prickle layer, which is diminished especially over the papillæ; the cells themselves are smaller. The papillæ are flattened from above, the epithelial ridges from below, like dove-tailing, due to increased resistance of horny plate above and diminished resistance of interpapillary layer below. The granular layer is absent completely, so that the prickle cells pass directly into horny cells, and as the prickle cells are not removed, *pari passu* in extreme cases they may be reduced to one or two layers. The hyperkeratosis extends into the follicular orifices, but does not form papules. The sweat pores are unaffected, as a rule, but the lumen of the sweat coils is dilated, and the loops resemble the duct, except that the latter has a double row of epithelium. The clinical difference seen in extreme forms, such as "sauroderma," he ascribes to prickle cell activity (parakeratosis), as well as hyperkeratosis, and these, he says, are the only forms which actively inflame and appear eczematous. This is not correct from a clinical point of view, as it is notorious that even the mildest forms of ichthyosis are extremely prone to eczematous inflammation on very slight provocation, and throws doubt on the correctness of his interpretation of the histological data, the more so as the almost imperceptible gradations, from the mildest to the most severe forms, render it improbable that there should be any fundamental differences in the pathology.

Diagnosis.—The diagnosis seldom presents difficulties, the disease dating back from a few months after birth; the dry, rough, dirty-looking, deeply-furrowed skin of xerodermia; the scales, plates, and the general distribution of I. simplex, and the warty growths and streak or nerve distribution of I. hystrix, are so characteristic as to leave no room for error, and the date of its onset will also distinguish it from those secondary local and general conditions which resemble the congenital cases. When, however, extensive eczema complicates xerodermia, there is a great resemblance to *prurigo*, the more so as it also commences in the first years of life; but the diagnosis between these diseases has been given with prurigo. A very mild degree

of lichen acuminatus is very like xeroderma with keratosis pilaris. Its recent development and perhaps a previous attack will distinguish it from congenital disease.

Prognosis.—The prognosis is decidedly bad for its curability, but temporary amelioration can always be afforded in ichthyosis simplex; and if the patient will take the daily trouble, the skin can be kept supple and free from discomfort. In very mild cases steady perseverance for years, with judicious treatment, has effected a cure, and Hebra mentions a case which got well after variola; a congenital case of Elliot got spontaneously well in some parts. Ichthyosis hystrix is very hopeless as a rule, but I have obtained a permanent removal of the growths where the development has not been very great.

Treatment Internally.—Until lately internal treatment in all forms was considered to be absolutely useless, but great improvement has been found to be produced by the internal administration of thyroid extract, beginning with a small dose, say of two grains for a child of five, and gradually increasing to ten grains a day. Although, unfortunately, the improvement only lasts a short time after the thyroid is omitted, it is of some practical value in aiding the cure of secondary eczematous complications. Dr. Buskett of Leeds found nitro-glycerin, one drop of a one per cent. solution three times a day, of marked benefit, but how long it lasted is not on record.

Locally.—This must be directed to removing the scales, and making and keeping the skin pliable. The first indication is best fulfilled by alkaline and bran baths, with friction while in the bath, preceded in bad cases by soft-soap inunctions; the removal of the scales must be followed by applications of glycerin, ointments, or lotions, and animal, vegetable, or petroleum fats. Almost any fat will do, such as lanolin, lard, cold cream, neat's-foot, olive, and almond oils; but cod-liver oil is too disagreeable, though very effectual. Kaposi speaks very strongly in favor of a five per cent. naphthol ointment in conjunction with naphthol soap.

Whichever substance is selected should be well rubbed in twice a day at first, but glycerin lotion will be found the most convenient application for the face and hands, in the strength of one to ten. Steady employment of these applications will soon render the skin quite smooth and supple, and the patient

will seem to be quite cured; but this state can only be maintained by inunctions two or three times a week and frequent baths, or else the roughness very soon returns, and only requires time to resume its former severity. Eczema, as a complication, requires treatment appropriate to that condition; callosities can be softened by strong potash lotions (one to two), or continuous applications of soft soap, or removed by salicylic acid plaster. The larger growths of I. hystrix should only be interfered with if they are in inconvenient positions, and can then be excised or scraped with a sharp spoon, followed by Paquelin's cautery, but the change is much deeper than it appears, and the destruction must be, therefore, more thorough than would be anticipated. The smaller papillary growths may be removed by the continuous application of tar ointment, and though many of them return, some will be permanently removed. A more pleasant application, and one which has been more successful than tar in my hands, is to paint the growths, after removing the horny caps, with a saturated solution of salicylic acid in alcohol. In this way I have got rid of large areas of minor growths.

Keratolysis Exfoliativa Congenita. In 1895 Sangster * recorded a case of congenital exfoliation of the skin. A man of twenty-four years first showed signs of desquamation on the forehead when three weeks old, it extended and became universal at the end of the third year, and had remained in much the same state since. The skin was constantly exfoliating and could be peeled off in large sheets. There were also tracts of thickened epidermis divided up in quadrillations.

The palms and soles were thickened and sodden from hyperidrosis and did not exfoliate.

There was a great deal of itching, and ecthymatous sores from scratching were present on the legs. The skin was white for some hours, when the loosened skin had been stripped off. The hair and nails were unaffected. He compared it with ichthyosis nacreosus.

Rasch † has had a similar case in many respects, but the skin was red, and he suggests "ichthyosis rubra" as its title.

* Sangster, *Brit. Jour. Derm.*, vol. vii. (1895), p. 37, with photographic plate.

† Rasch, "Erythrodermia Exfoliativa Universalis Congenita," *Derm.*

New-born children shed the skin in branny particles or shreds or lamellæ, occasionally of large size. The process is usually complete in a week, but occasionally lasts a fortnight, and H. Brauns records a case which lasted sixteen days.

The above cases appear to be an analogous condition lasting into adult life of a normal process of the new-born child, and is nearly allied to ichthyosis in its moderate form.

KERATOSES.

Keratosis has come recently into use as a generic term for diseases in which the chief feature is an overgrowth, or, more correctly, an accumulation of horny cells, for the cells themselves do not proliferate, but there is an increased production from the prickle cell layer—"the stagnation tumor," of Unna. These diseases are of a chronic and benign character as a rule, but in middle and advanced life, and in a few instances even in early life, epithelioma develops upon them. The most frequent precursors of this disaster are corns, senile warts, and arsenical keratosis palmæ et plantæ.

There are numerous diseases of very variable etiology, pathology, and nomenclature which may be brought under the ægis of keratosis, and various classifications have been proposed. I give here that of Brooke * as an example, using his own nomenclature.

HYPERKERATOSES.

1. General.	2. Regional.
Diffuse:	*Diffuse:*
Ichthyosis.	Kératodermie symétrique des extrémités (Besnier).
Acrokeratosis.	Erythema keratodes (Brooke).
Pityriasis rubra pilaris (Lichen acuminatus).	
Congenital:	*Congenital:*
Hyperkeratosis universalis congenitalis.	Keratoma palmare et plantare.

Zeitsch., vol. viii. (1901), p. 669. Abs. *Brit. Jour. Derm.*, vol. xiv. (1902), p. 110.

* For others by Unna, Dubreuilh, etc., see "Discussion on Keratoses at the International Congress of Dermatology in London," 1896, pp. 95 to 178 of *Trans.*; also Tommasoli, "Ueber Keratodermitides." Brochure, by Voss of Hamburg, 1893. Mibelli, "Etiology and Varieties of Keratosis," *Monatsh.*, vol. xxiv. (1897), p. 345, etc.

1. General.	2. Regional.
Multiplex:	*Multiplex:*
"Lichen pilaris."	Lichen spinulosus (Devergie).
Keratosis pilaris (in part) (Brocq).	Arsenical keratosis palmæ et plantæ.
Keratosis follicularis contagiosa (Brooke).	Kératodermie en foyers des extrémités (Besnier).
Porokeratosis (Milbelli).	Hyperkeratosis subungualis (H. Hebra).
Comedo { Acne comedo. Comedo atrophicans.	Verruca.
Lichen planus.	Callus. Clavus.
	Cornu.
	Onychogryphosis.
	Angiokeratoma.
Congenital:	*Congenital:*
Keratosis congenitalis.	Nævus keratodes linearis.
Multiplex.	
Ichthyosis hystrix (Lambert type).	

Keratosis as a complication may be seen in lichen planus verrucosus; lupus verrucosus; some forms of elephantiasis, etc.

No practical advantage is gained by those artificial arrangements which bring together such diverse diseases that they are treated of in various sections of the present work. Here it is proposed only to include those diseases in which the horny accumulation is almost the whole disease, or in which the term keratosis has become generally adopted as part of their nomenclature. We have, therefore, in the first group, warts, corns, callosities, and horns, and in the second, keratosis palmaris et plantaris (congenital or acquired), and including Besnier and Brooke's varieties.

Keratosis pilaris.

Porokeratosis.

Keratosis nigricans (papillomatosus) (Acanthosis nigricans).

Keratosis vegetans (follicularis) (Darier's disease).

Keratosis follicularis contagiosa.

Angiokeratoma.

Subungual keratoma and onychogryphosis are described with nail diseases.

It is not to be assumed that the diseases have necessarily any more intimate relationship than that they have a special anatomical feature in common.

VERRUCA (a wart).*

Synonyms.—Wart; *Fr.*, Verrue; *Ger.*, Warze.

Definition.—A small papillary growth with a horny covering, variable in size, shape, and consistency.

Warts are very variable in aspect and development, and have names accordingly, which are convenient for description.

Verruca Vulgaris is the form so common on the hands, especially in young people, where it forms a hemp seed to a split-pea-sized, hard, sessile, slightly conical elevation, with truncated top.

The upper and greater visible portion of it is horny, and the surface is smooth, or studded with minute, moniliform elevations, formed by the close aggregation of hypertrophied, horny-capped papillæ, which, by unequal growth, often break up the whole tumor into irregular craggy lobulations. When first formed they are the normal color of the skin, but the older and rougher they are, the more discolored they become, and are then some shade of yellow, brown, green, or even black. They are single or multiple, isolated or aggregated into close or loose irregular groups, and, while generally seen on the hands, may come anywhere. Warts may attack the nail fold and spread at the side under the nail, and are then somewhat painful on pressure. The growth is then flat instead of nodular.

They occur in great numbers as a symptomatic condition in many cases of keratosis nigricans about the buttocks and thighs as well as on the hands. One of my patients, although under forty, had been subject for several years to ordinary looking warts on the palms and backs of the hand and other parts, which if left alone became epitheliomatous; one excised in the wart stage was seated at a hair follicle. Above a much-thickened rete with enlarged papillæ was a mass of round bodies each with a central dotlike spore and a few layers of horny cells above it.

Verruca Plantaris, the Plantar Wart, deserves separate mention, not from any essential difference, but on account of the

*Author's Atlas, Plate XLVII., Fig. 1, illustrates common and plane warts, Fig. 2 senile or seborrheic warts.

distress and disablement it produces. Its origin is usually traumatic, from some defect in the foot covering, and it is then single in most cases, but I have known a large number to be present in connection with keratosis following hyperidrosis of the feet.

The single one is most common at one of the points of pressure, but it may come anywhere. It may be from a small to a large pea in size, and in the central part its component papillæ are generally discernible, and form soft horny fasciculi with a horny ring round, as has been accurately described by Dubreuilh.* When the whole is covered by horny epidermis it looks like a callosity, from which it is distinguished by the pain on pressure.

Verruca Plana is flat and very slightly elevated, from a pin's head to half an inch in diameter, sometimes single, but often very numerous. There are two kinds, one affecting children chiefly, the other old people.

In young people **(verrucæ planæ juveniles)** they are generally quite small, and occur chiefly on the face, especially the forehead, and, to a less degree, on the backs of the hands; they may or may not be slightly pigmented, are both disseminated and in irregular groups, and occasionally have a unilateral distribution. They are often quite square, and bear a very close resemblance to the papules of lichen planus in shape and color, being bluish-red or yellowish-brown; but lichen planus is rare on the face and scalp, where these lesions chiefly appear. Darier's † histological examination of them showed that the chief changes were hypertrophy of all the layers of the epidermis, with elongation of the papillæ. According to G. Lupis, "The transformation of the cells of the Malpighian layer into horny cells appears to be delayed, while the overgrowth of the epidermis is apparently prior to the elongation of the papillæ." He found no microorganisms. Sequeira found them to be acanthomata with very little hyperkeratosis. Herxheimer and Marx consider them to be quite different to common warts, chiefly because arsenic cures flat warts but not the common form, they say—an inadequate

* *Annales de Derm. et de Syph.*, vol. vi., May, 1895, p. 441.

† *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 619; abs. *Brit. Jour. Derm.*, vol. i. (1888), p. 82.

reason, in my opinion, since they are often associated in the same patient.

Verruca senilis, Keratosis pigmentosa, Verruca plana seniorum, Verruca seborrhoica, is the senile clinical variety, but pathologically they are quite different.

They are seen chiefly on the back and arms, and are generally pigmented from brown to black, associated with other signs of senile degeneration of the skin, and may itch severely. Although usually flat, they are sometimes considerably raised above the surface, and obviously papillomatous.

They are said to be very numerous sometimes in cancerous patients, and I have seen a very copious crop on the chest, associated with acute eczema, in an elderly woman. They are part of the symptomatology of xerodermia pigmentosa.

These warts have been histologically investigated by Neumann, Balzer, Handford, Pollitzer,* etc. The last-named wishes to revert to the old term of **seborrhoic wart.** He has examined eight warts carefully, and dismissed Neumann's and Balzer's descriptions as fanciful. The discoloration he attributes to the concretion of dirt and fatty scales. The stratum corneum is slightly, and the rete considerably, thickened. Epithelioid cells are arranged in groups and lines among the connective-tissue bundles of the corium throughout its whole depth; but the greatest peculiarity, he thinks, is the infiltration of fat in the epithelial cells, from the rete to the coil glands inclusively. He regards the warts as growths from misplaced embryonic cells, which is not very probable, as they are almost invariably present to some extent in old people.

Keratoma Senile, an allied if not identical condition, is not infrequent on the face of elderly people, especially about the nose and cheeks. It takes the form of a dirty-brown incrustation which is firmly adherent, but if forcibly removed a slight papillary growth, which bleeds readily, may be discerned.

These papillary growths are liable to degenerate into epithelioma or a rodent ulcer, and, as they are disfiguring also, are best removed. They can be shaved down with a scalpel and then carbolic acid crystals applied. Dubreuilh and his pupil Letonturier have drawn special attention to this condition.

* *Brit. Jour. Derm.*, vol. ii. (1890), p. 199, with plate. He quotes the descriptions of the other observers.

Verruca Digitata. The hypertrophied papillæ are here separated nearly or quite down to the base, and form fingerlike elevations with a horny cap, the rest being comparatively soft; they are aggregated into small groups, or occasionally large patches, and occur chiefly on the scalp.

Verruca Filiformis. These are a small variety of the previous form; they are of small diameter, or even filiform, with pointed end, not more than one-eighth of an inch long, and occur singly, or in small groups on the face, especially the eyelids, and on the neck.

Verruca Acuminata, or **Condyloma Acuminatum.** *Synonyms.*—Moist or venereal wart; *Fr.*, Végétations vénérienne; Condylomes acumines. *Ger.*, Spitzewarzen; Spitzcondyloma.

The most common position for these is about the anus, perineum, in the sulcus, behind or on the glans penis, between the labia, and in the vagina, less frequently in the axillæ, under the mammæ when they overhang, in the umbilicus, round the mouth, or on the toes. When they are on the free surface, where they are dry, they are the color of the normal skin; but in moist situations, where they are subject to heat, maceration, and friction, they are covered with a whitish or yellowish puriform secretion, which soon becomes highly offensive. They are made up of closely aggregated projections, which may be acuminate, tufted, or club-shaped, sessile or pedunculated, protruding much or little; they grow luxuriantly, increasing by peripheral additions, and according to their aggregation, subjection to pressure, luxuriance of growth, and the liveliness of the imagination of the describer, imitate various vegetable productions, and get such names as cauliflower, frambesia, fungous, mulberry or racemose, cockscomb, etc., appended to them. They may grow rapidly or slowly, and though parts of them may atrophy, on the whole they increase, exhibiting less tendency to spontaneous disappearance than is generally exhibited by other forms of wart. The large rapidly growing warts seen on the vulva of pregnant women are an exception, as they generally disappear spontaneously after parturition. A warty condition of the nipples also is sometimes seen in pregnant women.

Verrucose lesions of a more diffuse character are seen from time to time under various conditions, such as lupus verrucosus

and the verruca necrogenica, lichen verrucosus, etc., but there are also many cases which cannot be classified in which there are little or no signs of accompanying inflammation.

Etiology.—There is little fact, but much theory, with regard to their etiology. All ages and both sexes are liable to them, some forms being more common in the young than in the old. With regard to the moist form, or verruca acuminata of mucous membranes, the evidence that they are produced by irritating discharges, especially that of gonorrhea, is pretty conclusive; constipation is very often present, but for the rest we know nothing. The popular opinion that they are contagious, or at least auto-inoculable, has not been quite proved, though Kranz thought he had been successful in inoculation with the pointed kind; but Petter's more exhaustive and careful investigations and experiments were negative. Payne's personal experience is the best evidence yet; he scraped away a wart with his thumb-nail, and one developed under the nail, and others followed on the back of the thumb. Moreover, there are some facts in the distribution and development of ordinary warts, as well as their occurrence in several members of a family, which tend to prove the correctness of the popular belief; indeed, Colrat, Cornil, Isquierdo, Kühnemann, etc., have found micro-organisms, both cocci and bacilli, and although it is not yet proved that they are the morbific agents, it is highly probable that they are so.

Jadassohn,* after discussing the evidence, agrees that warts are transmissible, but could not find the bacteriological proof.

Anatomy.—The anatomy has been investigated by Bärensprung, Virchow,† Unna, and others with general agreement. Diverse as they are, they are all formed on the same principle, the shape and size being determined by a central core of connective tissue, containing, and fed by, a vascular loop; over this is an epidermic covering of varying thickness and cornification. The previous existence of papillæ is not essential, a connective tissue base being all that is required. The pointed forms differ from the others only in having more connective tissue, in being highly vascular, and while the rete cells are highly developed, the horny cells are comparatively scanty.

Kühnemann,‡ who has made careful observations, explains the matter

* "Sind die Verrucæ Vulgares übertragbar?" V. Deutsch. Dermatol. Congress, W. Braumüller, Wien.

† "Die krankhaften Geschwülste," p. 335.

‡ *Brit. Jour. Derm.* vol. i. (1889), p. 328, illustrated with critical review of previous observations.

differently. He says the process is primarily in the epidermis, the changes in the form and size of the papillæ and the enlarged vessels in the papillæ and cutis being secondary. The change commences in the prickle layer, which grows upwards and downwards. Then the other two layers alter; the granular layer is thickened, and this is the most conspicuous change when a wart is first examined; the horny layer is also enormously hypertrophied, but in consequence of defective keratinization the structure is looser and the nuclei are still stainable. This is the most important change, and he would place warts therefore in Auspitz's group of parakeratoses. He found numerous cocci and a few short rods in the prickle layer, but was unable to prove their significance, and other able observers have failed to find them.

Unna* distinguishes between the common wart and the condyloma acuminatum as follows:

The common wart is an infectious acquired acanthoma on which hyperkeratosis immediately supervenes The condyloma is a pure acanthoma appearing isolated round the mucous openings and on moist and seborrhoic areas of skin and tending to extend superficially. The digitate warts of the head and the filiform of the eyelids and neck, etc., are here included.

Treatment.—Until recently local treatment alone has been employed, but Colrat of Lyons, confirmed by other French physicians, has reported that repeated doses of sulphate of magnesia, 2 or 3 gr. in the case of children, ʒss for adults, three times a day, cause the wart to drop off. I can confirm the truth of this from my own experience in several cases, though, of course, it often fails. Enough sulphate of magnesia to produce two or three evacuations a day should be given, and it may be combined with the acid infusion of roses, or a carminative. In some cases I have thought full doses of nitro-hydrochloric acids have been of service. The tincture of thuya occidentalis (arbor vitæ), in doses of thirty to sixty minims two or three times, is said to be curative, but I have no experience of it. Paul Müller of Hamburg, and Pullin, are strong advocates of liq. arsenical. ♏ij, three times a day for an adult, and a quarter of a drop for a child. Mansel Sympson is of the same opinion, and says a fortnight's treatment is sufficient. Herxheimer and others affirm that it is efficacious in juvenile verrucæ planæ, but not for common warts. In verrucæ planæ I have found thyroid extract efficacious, and in one case the warts on the forehead which had been there for years disappeared during tuberculin injections for lupus vulgaris. Warts have also disappeared after revaccination.

* "Histopathology," p. 786.

The *local treatment* varies according to the kind and locality. Common warts may removed by the repeated application of the nitrate of silver stick, or preferably a saturated solution of chromic acid, taking off the black crust every few days; much time may be saved by applying salicylic acid plaster until the horny part is softened and removable, and then using chromic acid. For numerous small flat warts, a saturated solution of salicylic acid in alcohol, repeatedly applied, is sometimes quite successful; more obstinate cases may require the strong acid nitrate of mercury, but these and the other caustics stain the part, which is objectionable on the face, so that salicylic acid is always worth trying, and if this fails, glacial acetic acid may be carefully applied every two or three days, or, as Payne prefers, a weak acid two or three times a day. Caustic potash, if used on common warts, should be limited to the part itself by a ring of wax. Frequent painting with equal parts of liq. carbonis detergens and spirit is a good plan. Kaposi applies to multiple warts of the face sulphur ʒv, glycerin ʒiss, glacial acetic acid ʒiss. When warts are small and numerous I snip them off with scissors, and apply strong carbolic acid to the base with the end of a match. I have also removed them by electrolysis.

The plantar wart, when single, is best removed by electrolysis. A flat surgical curved needle, connected with the negative pole of the battery, is passed through the base of the wart and kept there until the blood-vessels which supply it have been blocked. I have had very satisfactory results with this method. Dubreuilh curettes them and packs them with antiseptic gauze. Eddowes curettes and then applies acid nitrate of mercury, which is very painful for some hours. If numerous I should shave them off with a sharp scalpel and apply pure carbolic acid to the base.

Digitiform or filiform warts may be ligatured or snipped off, and nitrate of silver applied to the base. The acuminate form may give more trouble from their extent and vascularity. When small and few in number, keeping them perfectly clean and dry is sometimes enough of itself; but painting them twice a day with liq. plumbi subacetatis, or a solution of perchlorid of iron, is valuable. If these fail chromic acid is the most successful, and nitric acid is also good, but both are painful; glacial acetic acid is generally successful and not very painful.

Small pedunculated growths may be removed like the digitiform; when large, by the galvanic écraseur, or they may be snipped off, and styptics, such as the perchlorid or persulphate of iron, applied with firm pressure. The bleeding is apt to be very great, and unless the growth is in a position readily accessible to pressure, the galvano-cautery is the safer plan, cutting through the mass slowly with a dull heat.

The warts of pregnant women should not be operated on until after parturition, but great care is required to keep the parts clean and sweet, and disinfecting lotions or powders are necessary; boric acid, freely sprinkled on, is one of the best applications, but iodoform, resorcin, and salicylic acid are valuable in obstinate cases.

CLAVUS (A nail).

Synonyms.—Corn; *Fr.*, Cor; *Ger.*, Leichdorn, Hühnerauge.

Definition.—A hyperplasia of the horny layers, in which there is an ingrowth as well as an outgrowth of horny substance, forming circumscribed epidermal thickenings, chiefly about the toes.

Corns may be hard or soft; the hard corn is a callosity plus a horny peg (the clavus or nail), which, growing downwards, produces atrophy of the papillæ and a cup-shaped depression immediately beneath, while the adjacent papillæ are hypertrophied. Externally there is much less elevation than in the callosity, and it is conical, with sometimes a slight central elevation harder than the rest; in larger corns there may be more than one such horny peg, which, when pressed upon, dig into the cutis, and give rise to exquisite pain or dull aching, according to the acuteness of the pressure, producing sometimes inflammation and suppuration. Corns are chiefly situated on the outer side of the little toe, the upper surface of the other toes, or on the sole. The soft corn is situated between the toes, where it is softened by maceration, and may exude a small quantity of fluid. It is often more painful than the hard ones, and, like them, may suppurate and produce painful ulcerations, and even lead to caries. Corns are

sometimes spontaneously painful, and those who have them badly often find them veritable barometers for approaching wet weather.

Etiology.—Corns, like callosities, are almost always the result of pressure or friction; hence both tight or badly fitting boots produce them, and a combination of the two faults in construction is the most fruitful cause. Analogous conditions may arise spontaneously, as in the case Davies-Colley records: the palms and soles of a Hindoo were the seat of disseminated clavus nearly all over the surface; there was no history of the circumstances of their formation, but they could scarcely have been from pressure.

Pathology.—According to Rindfleisch, when the pressure or friction falls upon a yielding part, a callosity is produced; when on an unyielding situation, the pressure is more concentrated, and a corn results; in both cases there is congestion induced, which leads to hyperplasia of the horny layers. Small hemorrhages beneath these thickenings are common, and sometimes a bursa is formed.

Treatment.—The first care must be to take off the injurious pressure, and to this end the boots should be made to conform to the shape of the foot, instead of trying to make the foot conform to the boot. The corn itself may be removed, either by soaking it in hot water, and then shaving down the callosity with a sharp knife or razor, while the center must be excised, preferably with a scalpel. The re-formation must be prevented by daily soaping, and wearing a perforated amadou or felt plaster for some time. Or, instead of cutting, a salicylic acid plaster may be worn until the thickened cuticle can be peeled off, and then the soaping be used, to prevent renewal. Soft corns should have the hard skin removed in one or other of the above ways; careful daily ablution with soap and water should be used, spirits of camphor painted on at night, and wool worn between the toes in the daytime. All the numerous corn cures, if of any use, act on one or other of these principles.

Duhring recommends the application of a four to eight per cent. caustic potash solution after removing the thickened cuticle; it must be done cautiously, the part round being protected by a ring of plaster. Vigier's formula is also a good one: salicylic acid gr. 15, ext. cannab. ind. gr. 8, alcohol ♏xv, ether

ɱxl, collodion flexile ɱlxxv. It is to be painted on with a brush three times a day for a week, when the corn can be easily picked off.

CORNU CUTANEUM.*

Synonyms.—Cutaneous horn, Cornu humanum; *Fr.*, Corne de la peau; *Ger.*, Hauthorn.

Definition.—A horny excrescence of much the same general structure as that of animals, but very variable as to shape.

Horns are very rare in the human subject, but having been regarded as curiosities, they have attracted more attention, and there is more written on them, than their practical importance would otherwise warrant. Lebert is the most comprehensive author on this subject. Horns are usually solitary, but may be multiple: thus Bötge had a case of a man, æt. sixty, with six horns on his face; and another case, a girl, æt. nineteen, in which they followed upon an extensive eruption, and were succeeded by warty growths, which appeared in the second year of life and studded the part of the body below the crest of the ilium, where they were of various sizes, while near the navel and on the right labium majus they were nearly six inches long; it is probable that this was a case of ichthyosis hystrix.

Human horns closely resemble those of animals, but they differ from them in not being of uniform size and shape; they are laminated or fibrillated, solid, and of course hard and dry, some shade of gray, yellow, brown, green, or black; roundish, conical, angular, or flattened; generally twisted or bent, only small ones being straight; they may have either a pointed or truncated end, but they are largest near the base of origin, which may or may not be raised above the surface. They may be of any size, from a quarter of an inch to twelve inches long,

* *Literature.*—Lebert, "Ueber Keratose oder die durch Bildung von Hornsubstanz erzeugten Krankheiten und ihre Behandlung" (Breslau, 1864), 109 cases. Wilson, *Med. Chir. Trans.*, 1844, vol. xxvii. p. 52, and "Dis. of the Skin," sixth edition, p. 796, analysis of 90 cases and many references. *Mémoires de l'Académie Royale de Médecine*, June, 1830, 71 cases. Pick, *Viertelj. für Derm. u Syph.*, 1875, p. 315, 10 cases of horns on the penis, with two colored plates; in one case, the horn grew two inches in six months.

from about an eighth of an inch to between four and five inches in diameter; that of Paul Rodriguez,* growing on the side of the head, being fourteen inches round, and divided at the point into three branches. Their growth is usually slow, but variable, and they may either drop off or be knocked off, exposing a red raw surface, from which another is liable to be produced.

The majority of Lebert's, Wilson's, and the French Academy lists are repetitions of the same cases. An analysis of these shows that nearly half the horns occur on the hairy scalp, forehead, or temples; about one-fifth on the rest of the face, especially on the nose; and the remainder on the body in the following order: the extremities, especially the thighs, the male genitals, chiefly in the sulcus of the glands penis, and the trunk. They are only painful when injured, and then may either be torn off, or the base irritated into inflammation which may lead to their dropping off. According to Lebert, epithelioma † develops in twelve per cent.; in rare instances, horns have developed on epithelioma.‡

Gussmann records the case of a girl in which horns grew all over the scalp, where there was a great deal of rupioid psoriasis.

Etiology.—Of this our knowledge is meager. Old age is a predisposing cause, and they are rare before forty, but have been seen at any age, from infancy (three cases) to ninety-seven years, and are slightly more frequent in females than males. The majority start from sebaceous cysts, others from warts, and some from scars. Altered toenails sometimes grow vertically or spirally upwards (Hallopeau).

Pathology.—They are essentially overgrown warts. They always begin in the rete mucosum, or the homologue of it lining the glands and follicles; there is always hypertrophy of the papillæ, and upon these the horn is built up, being composed of columns which on section are seen to consist of epidermic horny cells, generally without nuclei, arranged in concentric laminæ, while similar cells, irregularly placed in the interstices

* *New York Medical Repository* for 1820.

† For an example of this see a case by A. Pearce Gould in *Path. Trans.*, 1887.

‡ A case of a horn growing on an epithelioma of the cheek, in a man of sixty-three, was shown by Neumann at Vienna, *Annales de Derm. et de Syph.*, vol. iii. (1892), p. 1316.

between the columns, cement them together. Large vessels are formed in the base of the horn. Spietschka * says that no true horn can be formed if there are no papillæ in that part of the skin, but Sutton has demonstrated a case in which a horn grew from the cicatrix of a burn on the thigh.

Treatment.—Soften the horn with water dressings; or if the patient is under an anesthetic, tear or cut it off and cauterize the base, or apply chlorid of zinc paste or caustic potash, or scrape it with a sharp spoon. If the base be not removed, recurrence will take place. Their liability to epitheliomatous development renders it important that the removal should be early and complete.

CALLOSITAS.

Deriv.—*Callus*, hardened skin.

Synonyms.—Callosity, tylosis, tyloma, callus, keratoma.

Definition.—A hard, thickened, horny patch, produced by hyperplasia of the horny layers.

Callosities may be congenital or acquired. The usual acquired variety is common enough in a greater or less degree, and forms on parts exposed to intermittent pressure or friction. They come chiefly on the palmar and plantar surfaces, are slightly raised, of various sizes, and consist entirely of hyperplasia of the horny layers. This produces the well-known thickenings, with which everyone is so familiar, on the hands of oarsmen, mechanics (especially smiths), and, less frequently, on the fingers of harp and violin players. Purdon drew up a list of localities according to occupation, but they do not need any more special description.

An extreme case, in a negro stoker, is recorded by Morrison.† A very marked case, also in a negro, came under my care. The patient was an omnibus conductor, and was always clinging on to a brass rail. Perhaps negroes are especially liable, probably because hyperidrosis of the palms is nearly always present.

* Spietschka, "Histologie des cornu cutaneum," *Archiv f. Derm. u. Syph.*, vol. xlii. (1898), p. 39.

† *Amer. Jour. Ven. and Cut. Dis.*, vol. iv. (1886), p. 5, with plate.

This is a very frequent antecedent in both palmar and plantar callosities, and is one reason of their frequency on the feet of rheumatoid arthritis patients.

On the feet they occur generally from ill-fitting boots, and are more common in men than women from the nature of their occupations, and more frequent in the middle-aged and elderly than the young. Occasionally they appear to be spontaneous in their development. A curious instance of flat callosities over all the first interphalangeal joints came under my notice in the person of a very aged mulatto woman, but whether congenital or acquired I am unable to say; they were not due to her occupation. Mr. Sutton informs me that callosities, in exactly the same position, are always present in gorillas, as they press upon this part in walking. A similar condition exists over the ischial tuberosities of baboons and other cynomorphous monkeys.

Treatment.—When treatment is required, which would not be the case when the affection is due to the occupation, the part should be soaked in hot water and pared down with a scalpel, and then Unna's salicylic plaster continuously applied for a few days, when the whole horny part will be loosened and can be peeled off. To make it a permanent cure, the cause must be avoided.

KERATOSIS PALMÆ ET PLANTÆ.*

Synonyms.—Tylosis; Ichthyosis palmaris et plantaris; Keratoma; Mal de Meleda.

Definition.—Hypertrophy of the horny layer of the palm or sole into a hard plate.

Although it is etiologically and otherwise different, and pathologically allied to the callositas, it is clinically convenient to separate the two conditions.

Keratosis is a rare affection, and usually congenital, but may be acquired. It is symmetrical, and almost always affects both

* *Literature.*—Author's Atlas. Plate XLIV. Figs. 3, 4, 5, 6 show varieties of tylosis, as it is there called. The newer name is now adopted, as it brings it into line with the other diseases with this designation. Also a paper by the author in *Brit. Jour. Derm.*, vol. iii. (1891), p. 169, with cases and colored plate.

palms and soles, though there may be some variation in degree. It is usually confined to the palmar and plantar surfaces, but the dorsum may be affected to some extent over the joints. In a well-marked case the horny layer of the epidermis is thickened into a yellowish translucent, horny plate, from one-sixteenth to one-eighth of an inch thick, as a rule quite dry and hard, even when, as it usually does, it develops on a hyperidrotic palm or sole, but it may be associated with hyperidrosis, and is then, of course, sodden. The surface may be quite smooth or it may be pitted, and have a worm-eaten appearance. This plate forms a uniform layer over the whole palmar surface, with abrupt borders without any redness beyond. On the soles the inner border of the sole at the arch of the foot escapes; in other words, only that part of the foot which touches the ground in walking is affected. There is great deepening of the main lines of flexion, and there is naturally some hindrance to free movement, with diminished sensitiveness, but no other symptoms in most cases, but in some, especially if it arises from an inflammatory condition, the horny plate splits into irregular masses, and these fissures may go down to the corium and be very painful. This is especially frequent on the feet and at the border of the thickening, and of course interferes with walking.*

Etiology.—In acquired cases hyperidrosis, whether congenital or not, is the most common predisposing cause, and even in arsenical cases probably plays an important part. It may also arise from the long-continued use of arsenic, which also produces hyperidrosis. At the commencement the horny thickening occurs round the sweat orifices, at first like lichen planus, but later projecting in convex papules, so that the surface is nodular; and at this period its arsenical origin may be surmised, but gradually the slight depressions between the little nodules become filled up, and a level surface is produced, and then the tylosis is indistinguishable from the congenital form, unless other circumstances point to arsenic as a cause.

The variety figured by Hebra in his Atlas, and called "*tylosis*

* Bassaget describes a congenital and hereditary case from Besnier's clinic, in which the palms and soles had a mosaic appearance from superficial fissures. *Annales de Derm. et de Syph.*, vol. v. (1894). Vörner has published a similar case with Histology, p. 1356. *Archiv für Derm.*, etc., vol. lvi. (1901), p. 3.

palmæ manus verrucosa," * is probably the nodular stage of arsenical tylosis. When the knuckles and finger joints are affected the thickening is not uniform, but has a pitted aspect, and is not so much developed as on the palmar surface.

Cases associated with pemphigus or dermatitis herpetiformis are probably due to the arsenic so often given in large doses for those affections. I have also seen it in lichen planus. Hutchinson considers senility a predisposing cause.

Most are congenital and show some change soon after birth, but it does not attain its full development for some time. It attacks both sexes, though when it shows family prevalence it may be confined to one sex in that family. It is often traceable through several generations; thus in my case † and that of Horton Dale, ‡ recorded as before mentioned, it went through five generations, in Audry's four, in Unna's § three, and in another of mine at least two. In the first named of mine every autumn, beneath the palms only, blisters formed of about the size of a sixpence, which, if exposed to friction, became very large. They formed in succession, the whole epidermis became loosened and peeled off, leaving the skin thin and tender.

The so-called "**Mal de Meleda**" ‖ is a congenital keratosis chiefly, but not exclusively, of the palms and soles. Meleda is a small island off South Dalmatia, and probably intermarriage in so small a community is the cause of the endemic prevalence of the affection, which begins in the first year of life. There is a yellow horny plate, already described, with black dots corresponding to the sweat orifices. There is also ichthyotic thickening of the skin and deepened creases on the dorsal aspect of the wrists and ankles, and occasionally the elbows and knees have been involved. At the margin, islets of healthy skin are

* Hebra's *Atlas*, Heft x., Taf. 1, Figs. 1 and 2. Fig. 1 represents the ordinary form.

† *Loc cit.*

‡ *Brit. Med. Jour.*, October 1, 1887, p. 718.

§ Unna, "Ueber das Keratoma Palmæ et Plantæ Hereditarium," *Viertelj. f. Derm. u. Syph*, vol. x. (1882), p. 231, with photograph.

‖ It was first described by Salli in 1826. Lately Hovorka and Ehlers have written on it. *Arckiv f. Derm. u. Syph.*, vol. xxxiv. (1897), Heft 2 and 3, Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 416. Also vol. x. p. 177, abs. of Neumann's paper on "Keratoma Hereditarium," two cases from Meleda.

sometimes surrounded by the keratosis. The upper layers may be moist and greasy, and then there is an offensive odor. Long-standing cases fissure and break up like the bark of a tree.

Besides these cases of simple hypertrophy, horny thickening of the palms and soles may occur secondarily to inflammations, such as eczema, psoriasis, lichen planus, syphilis, etc. These are generally patchy, but may affect the whole surface and have other differences, which are described under their appropriate headings. There remain a certain number of rather rare cases, in which, along with the thickening of the epidermis, there are some inflammatory phenomena in the form of a ring of erythema, and perhaps swelling and a sensation of heat at the border of the horny portion. This condition may be in patches with a broken-up surface, as in the **keratodermia erythematosa symmetrica** of Besnier; or diffuse, as in the **erythema keratodes** of Brooke. I saw a well-marked case, resembling Besnier's,* in a gouty man, æt. fifty-six. The condition is unlike eczema palmare in appearance, but may be allied to it. The nosological position of Brooke's † case is doubtful; he is quite satisfied that such cases have nothing to do with ordinary keratosis, but it is convenient to consider them here until we know more of them. The disease begins, says Dubreuilh, by a red, deeply seated nodule, and spreads to form a patch the size of sixpence. As it spreads out it gets a thick, horny coating with an erythematous raised edge round, slightly tender to the touch. It is not absolutely limited to the palms and soles, as it may spread to the dorsum.

Treatment.—In congenital cases a cure can, *a priori*, scarcely be expected; but Unna cured five members of the family already alluded to, by perseveringly painting on a ten per cent. solution of salicylic acid in ether, to which a little fat was added; while to the more marked cases a twenty per cent. salicylic acid plaster, applied as already directed and repeated several times whenever the thick skin re-formed, was eventually successful. A similar treatment might be tried for the arsenical and other acquired cases, but I have never seen a cure yet, though Hebra

* International Atlas of Rare Skin Diseases, Plate V., Fig. 1.

† Erythema Keratodes of Palms and Soles," *Brit. Jour. Derm.*, vol. iii. (1891), p. 335, with colored plate. Dubreuilh has published a similar case, *Brit. Jour. Derm.*, vol. iv. (1892), p. 185.

says they get well spontaneously in about a year. In the inflammatory form Besnier produced amelioration by means of soft-soap applications and baths, but could never cure it, and in the winter it was always worse. My patient improved with ichthyol and salicylic acid applications, but he lived a long way from London, and I lost sight of him before he was quite well. Brooke produced an apparent cure of his cases with ichthyol in three-minim doses internally, and the constant application of an ointment of ichthyol and salicylic acid; but one subsequently relapsed.

In extreme cases it would be worth while shaving off the thickened epidermis, and then applying a Paquelin's cautery, so as to destroy the papillary layer of the skin.

KERATOSIS PILARIS.

Synonyms.—Pityriasis pilaris; Lichen pilaris; Keratosis suprafollicularis (Unna).

Definition.—An accumulation of horny cells, which plug the orifice of the hair follicles, and thus form small papules.

This disease is still called lichen pilaris by some authors, but it differs from the lichen class in not being of inflammatory origin.

Symptoms.—It consists of pin's-head-sized convex papules of the same color as the normal skin, or of grayish or blackish hue from adherent dirt; each of the papules is formed at the orifice of the hair follicle, and can be completely picked out by the nail, leaving a depression. Sometimes the hair pierces the papule, but more frequently it is coiled within or broken off at the surface, showing only a dark dot. The adjacent skin is normal in color, but often xerodermatous, or even ichthyotic, and this, with the hard papules, produces a very rough, nutmeg-grater sensation.

It occurs chiefly on the extensor aspect of the limbs, especially the arms and thighs, and occasionally on the trunk; but it varies in extent and development, sometimes being scarcely noticeable, at others very conspicuous, from the number and size of the papules.

Etiology.—It is most common in those who seldom or never

take baths, but it may occur in others from the time of puberty and onwards, and is sometimes present in a high degree in the ichthyotic.

Anatomy.—Unna* has examined eight cases histologically, and concludes that the affection is only apparently non-inflammatory; that it is a chronic inflammation localized at the follicular orifices, and that the "apparently non-inflammatory form has something of the same relation to the evidently inflammatory as pityriasis capitis has to seborrheic eczema of the scalp."

The primary change is in the horny layer of the follicular entrance. This horny layer runs completely over the follicular entrance, blocks it and the exit of the hair, which is therefore compelled to undergo spiral twisting and "hold the yielding walls of the follicular neck asunder." The resistance to the escape of the hair produces a permanent irritation and hypertrophy of the arrector muscles, and clinically produces a chronic *cutis anserina* and anatomically a bending of the hair follicle. There is always slight and sometimes pronounced perifollicular and interfollicular new formation of connective tissue cells, and in about a third of the cases, permanent dilatation of the vessels.

Diagnosis.—It is in many respects like a late stage of *true* lichen pilaris, but it lacks the central horny spine of that affection, is essentially chronic, and there is no inflammation at the commencement. It closely resembles *cutis anserina*, but that is a transitory condition, lasting very little longer than the cold or fear which produces it, and its papule cannot be removed by the nail.

From *lichen scrofulosus*, and the *papular syphilid* with similar characters, it may be distinguished by the positions, the greater prominence and hardness of the papules, and by the constitutional condition present with these two inflammatory conditions.

Treatment.—This is much the same as that of xerodermia, viz., alkaline and vapor baths, soft-soap inunctions, followed by warm baths; or the inunction of oily substances of various kinds may be rubbed in, in the same way as is described under Ichthyosis.

* "Histopathology," p. 287. He compares his observations with mine on lichen pilaris, but mine refer to a totally different disease, although the two affections are often called by the same name of lichen pilaris.

POROKERATOSIS (Mibelli).*

Synonyms.—Hyperkeratosis eccentrica (Respighi); L'hyperkératose figurée centrifuge atrophiante (Ducrey and Respighi).

Mibelli and Respighi in 1893 described simultaneously a form of disease which they both considered to be a hyperkeratosis, that is, an overgrowth of the horny layer, and Mibelli, finding that the horny change was especially marked at the sweat ducts, called it **Porokeratosis.** No less than four cases have been described by these two observers, two of the cases by both authors; and others have been published by Hutchins, Reissner, Max Joseph; Gilchrist (two in one family), Dubreuilh, Wende, Basch, Ducrey and Respighi together, their case also affecting mucous membranes; Kullack of Berlin (three cases). Galloway showed a case at the Dermatological Society of London in June, 1901, the only one shown there up to that date, but Perry has shown one since then.†

Moderate-sized lesions are circinate, crescentic, or gyrate, but with a sinuous outline. They are from a third of an inch in diameter to an inch or two when single; but compound lesions may extend with some breaks of continuity for the length of a limb segment, as in Mibelli's case in the International Atlas, where it extended on the extensor aspect the whole length of the forearm, and back of the hand nearly to the knuckles, gyrating in a most complicated outline with the central portion clear. It took five years to attain these dimensions. Confining attention to a medium-sized lesion, the border is raised about one-twelfth of an inch above the normal skin, rather abruptly, and

* *Literature.*—V. Mibelli, International Atlas, No. 9, 1893. For the remaining literature see Wende, *Amer. Jour. Cut. and Ven. Dis.*, vol. xvi. (1898), p. 505, who gives a new case and references to date, except Ducrey's and Respighi's important and highly illustrated article in *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 609, on "L'Hyperkératose figurée centrifuge atrophiante." Useful abstracts are Mibelli's first paper, *Annales de Derm. et de Syph.*, vol. v. (1894), p. 128. Respighi's 1895 paper, *Brit. Jour. Derm.*, vol. vii. (1895), p. 367. Max Joseph's paper, *Brit. Jour. Derm.*, vol. ix. (1897), p. 366. Gilchrist's, *Amer. Jour. Cut. Dis.*, vol. xv. (1897), p. 386.

† Payne showed a case on October 12, 1892, which was probably porokeratosis, but it was not recognized at the time.

slopes off towards the center. The outer portion of the border is studded with miliary prominences, while the upper surface has a fine linear horny layer upon it, and occasionally isolated or grouped miliary oval concretions. There is no sign of inflammation, the color being almost the same as the normal skin, but more frequently of a semi-translucent yellowish tint, due to the horny change in the epidermis. Mibelli speaks of the color being in different lesions, yellowish, dirty yellow, red-brown, deep red with a violet tint, a little browner or very little different from the normal skin.

Respighi lays great stress also on the presence of a horny linear projection, either continuous or divided longitudinally by a narrow furrow, with a horny border. It was well marked in Galloway's case.

The tendency is to extend very slowly at the periphery, clearing up more or less completely in the center, so that the inclosed skin may be normal, atrophically depressed, and without hair or sweat, but it is very exceptional for any lesions to undergo complete involution (one case of Mibelli's). The disease, when once it is established, is very slowly but continuously progressive as a whole for an indefinite number of years, or throughout life. Wende's case began as a small rough scaly plaque on the back of the hand, which soon attained to the size of a pea, and looked like an ordinary wart. After about a year it suddenly developed into a small ring, and then spread peripherally. The irritability decreased with this extension at first, but increased again afterwards. During the last two years there were sudden colorless evanescent swellings round or even away from the lesion, but confined to the affected area. Hutchins' case affected the palm as well as the back of the hand.

Positions.—The favorite positions are the back of the hands, including the fingers, and extending up the wrists and rest of the arm, and less frequently the corresponding portions of the lower limb. It also attacks the neck, especially at the sides and nape; the face and scalp, these positions ranking next in frequency to those of the hands and wrists. In exceptional cases it has involved the body, the buccal mucous membranes, and the nails.

Besides these most typical lesions, Ducrey and Respighi describe:

1. Miliary projections, either acuminate or with a punctiform umbilication at the summit, and with a peripheral collarette.

2. Miliary papules, flat or slightly convex, bordered with a very fine horny collarette.

3. Patches, hard over the whole area, of variable size, inclosed by a furrow with a horny raised border, which may even project above the area it incloses. The furrow is sometimes only visible when the patch is bent.

4. On the mucous membranes there are white opaline spots with white projecting border, or uniformly opaline all over.

Etiology.—Both sexes are liable to it, but hitherto the majority have been males. It may commence at any age from one to two years and upwards. It shows a family prevalence, and in Gilchrist's series of cases there were eleven persons affected in four generations of the family.

Pathology.—This is unknown. Respighi tried in vain to find a microbe, but Wende, in one out of many inoculation experiments, was apparently successful in reproducing the disease in the patient already affected within ten days of inoculation, and the microscope, after excision of the small patch, which was allowed to remain ten weeks, seemed to confirm the truth of the supposition of identity. It is, however, in its most prominent features a keratosis with horny plugs, especially marked at the sweat orifices, though Ducrey and Respighi's observation that the buccal mucous membrane could be implicated, shows that a sweat pore is not essential to the process.

Anatomy.—This has been studied by almost all those who have recorded cases. It may be summed up as follows:

The changes are almost entirely epidermal. The horny layer is very much increased in thickness and density, especially in the middle layers; the prickle cell layer is also much thicker, especially in those parts where the hyperkeratosis is marked, and the interpapillary cones are thicker; and a mass of horny cells extends from the base of the interpapillary cone to the surface.

The stratum granulosum was found by Wende to consist of five to eight layers.

The sweat pores are filled with horny cells, and their orifices crowned with a horny incrustation; the sweat coils are more or less atrophied. The superficial layer of blood-vessels is dilated, and there is a multiplication of leukocytes especially near the coil glands, but it is not a conspicuous feature. Respighi confirms Mibelli in that the horny change is most marked at the orifices of the tubular glands, but also adds those of the acinous glands.

In the anatomy of the buccal lesions there is great dermic infiltration, and very considerable development of the papillary body, so that Ducrey and Respighi were led to consider it of dermic origin, and not epidermic, as Mibelli and others consider it to be.

Diagnosis.—The most conspicuous features are the presence on the exposed parts, hands, wrists, face, and neck, of ringed or gyrate patches of very variable size, with a slightly atrophied or normal center, and an abruptly projecting border with a sinuous outline. The whole is suggestive of a horny and therefore epidermic development, inflammatory signs being absent.

It is not like any other dermatosis with which I am acquainted.

Prognosis.—Slow progressiveness is the rule, but not at a uniform rate. Involution is very rare.

Treatment.—If the lesions are small in size and number, they might be excised, but experience has shown that, unless removal is radical, the disease returns on the site of removal.

Salicylic plaster might be applied, and after removal of the horny portion, strong acid nitrate of mercury pressed in with a wooden match to a small area at a time.

G. H. Fox * has described a form of **axillary porokeratosis,** of which he has seen two cases. The eruption consisted of numerous firm, smooth, rounded papules about a line in diameter of normal color, except when the intense itching led to excoriation. The lesions were chiefly in the axillæ in the woman and entirely there in the man. In the woman there were also some papules on the pubes, but these did not itch much. Eleven months of the most varied treatment failed to relieve the distressing pruritus. Fordyce found microscopically a hyperkeratosis round the sweat and hair orifices with acanthosis down to the corium, mechanical dilatation of the coil glands, and some chronic inflammation of the derma. The general microscopical appearances were like porokeratosis.

* *Amer. Jour. Cut. Dis.*, vol. xx. (1902), p. 1.

KERATOSIS NIGRICANS.*

(Papillaris.)

Synonyms.—Acanthosis nigricans; Dystrophie papillaire et pigmentaire (Darier); Dystrophie papillo-pigmentaire (Hallopeau).

Definition.—A general symmetrical disease, characterized by hard and soft papillary growths, keratosis, and pigmentation.

This is a very rare disease, of which there are only about thirty cases on record.

It was first described by Unna's pupils, Pollitzer and Janowsky, in 1890, as acanthosis nigricans, and soon after by Darier. Its striking characters partly account for the number of cases since reported. I have chosen the name proposed by Kaposi, as it represents a clinical fact, instead of an incorrect pathological theory, and brings it into line with other keratoses.

The mode of onset varies. In some pigment changes are first noticed on the neck or face.

In one of my own cases, and in others also, a sudden outbreak of common warts appeared on the back of the hands, or they have begun on the thighs. In a third set itching inside the thighs was the first symptom. In a fourth a discomfort in the tongue and mouth marked the onset, and was an early symptom in many cases.

Whatever may be the mode of commencement, the other symptoms usually develop symmetrically, rapidly or even simultaneously, and over a wide area, but showing a marked prefer-

* *Literature.*—Author's Atlas, Plate LIV., Acanthosis Nigricans; also Internat. Atlas, Plates X and XI., Pollitzer and Janowsky's cases. Darier, "Dystrophie papillaire et pigmentaire," *Annales de Derm.*, vol. iv. (1893), p. 665, and vol. vi. (1895), p. 97. Cases by other reporters, *loc. cit.*, vol. iv. (1893), p. 876; vol. vii. (1896), pp. 1276, 1282; vol. viii. (1897), pp. 210, 232 (abs.), and p. 808 (abs.); vol. x. (1891), (abs.) of two cases. Kuznitzky, *Archiv f. Derm. u. Syph.*, vol. xxxv. (1896), with reference. Spietschka, *ibid.*, vol. xliv. (1898), p. 247. Burmeister, vol. xvii. (1899), p. 343. Morris, *Med. Chir. Trans.*, vol. lxxvii. (1894), colored illustrations of remarkable case. Barski's case is published in *Trans. of Moscow Congress*, 1899, p. 575; at pp. 186, 192, are communications by Heuss, Hallopeau, and Wolff. Hügel from Wolff's clinic, R. Schultzel et Cie., Strasburg, 1898, and references.

ence for certain regions. These are the neck, groins, axillæ and flexures generally, the back of the hands, the palms, the face and the orifices of the mouth, anus, vulva, ears, and even the nostrils and eyelids.

On the trunk the umbilicus, mid-sternum, the flanks, and interscapular regions are the most frequently involved, but there is no part exempt. On the lower limbs there is usually not much, below the lower and inner half of the thighs, except the popliteal space and the dorsum and sole of the foot.

Taking them in the above order, the neck is found to be, not only pigmented from a brownish to bister tint, or even black, but owing to the thickening of the epidermis the natural lines of the skin are much exaggerated and the appearance of lichenification, but without induration, is produced.

Soft papillary growths from a hemp seed to a pea are numerous, and there may be seborrheic warts at and below the nucha, where the thickening is usually most pronounced.

The axillæ show these changes in a higher degree, the color is a grayish or sooty-black in the center, shading off at the margin and down the sides. The thickening now amounts to deep folds traversing the axillæ obliquely, while shallower lines at right angles break up the ridges in squarish masses of papillomatous appearance. In Morris' case, as the disease advanced, a raw-looking red mass produced through the black part. Hard as well as soft warts may be numerous, not so much at the axillæ themselves, but beyond them, where the skin is no longer moist. The groins are very much like the axillæ, but here the disease reaches its highest development, the genitalia being often of a sooty black. The anus is frequently involved with a warty growth and black pigmentation round it; the umbilicus presents a similar aspect, a band of pigmentation often extends from the latter transversely or vertically. In my own and other cases there were numerous warts on the inside of the thighs.

On the back of the hands, wrists, and halfway up the forearms, there are often numerous warts indistinguishable from the common kind, which coalesce towards the wrists into diffuse broken-up horny masses, and the rest of the skin is obviously thickened in the upper layers and traversed by the deepened natural lines, deepest transversely. In my case the flexor surface as well as the extensor aspect of the wrist was affected.

Over the knuckles and finger-joints the skin presents a granular appearance due to minute horny scales. The color is usually only brownish, but in Janowsky's case was blackish and with exaggerated quadrillation, it looked like shark skin.

The palmar surface shows diffuse horny thickening of a transparent yellowish tint, the center of the palm being the least affected. The nails often show damaged nutrition, in the shape of longitudinal striæ, transverse white bands (my case), pitting and brittleness at the edges, and Collan's case had "spoon" nails and the hair fell out. The flexures of the elbows and knees, if affected, show the same obliquely transverse ridging and pigmentation, with or without warts, as on the axillæ, but in quite a minor degree. On the trunk there is often diffuse black pigmentation, over the lower half both back and front, or it may be in the upper half only, or nearly all over. The nipples are not only discolored, but may have a warty development round their base, which makes them painful when pressed upon. On the face there may or may not be dusky or brownish pigmentation either diffuse or round the orbits, but the most striking changes are round the commissures of the lips and inside the mouth.

In Pollitzer's case there were remarkable papillary gray-black growths at the angles of the mouth as large as the tip of the finger. This is exceptional, but slight developments are not uncommon. Inside the lips the mucous membrane is thickened, velvety, and granular; the buccal mucous membrane shows a similar change, but with a whitish surface like lichen planus; the gums are sometimes affected; the palate, both soft and hard frequently, have the thickening and granulation very marked, sometimes warty; at the anterior half the pharynx and epiglottis have been exceptionally involved (Janowsky). The dorsum of the tongue may be profoundly affected; in some of the cases it was covered with long filiform projections two to three millimeters long, which could be bent or separated like hair (Darier and Boeck). In Pollitzer's and Morris' cases the tongue was deep red, fissured, and condylomatous; in Janowsky's the under surface also was affected, but in his case the whole oral mucous membrane was profoundly affected. In my own case the surface of the tongue looked as if coated with a bluish-white paint, and there was only slight thickening of the surface, and

one of the first symptoms was a feeling of roughness on the tongue and palate and loss of taste; in Pollitzer's case the tongue and mouth were painful; in Hallopeau's case the tongue felt swollen.

In a few cases the edges of the nostrils have been affected and warts at the naso-labial fold are common; in Janowsky's case there was hyperplastic rhinitis. In several instances millet-seed or filiform papillomata have been seen on the edges of the eyelids, some pierced by cilia and aggregated towards the commissures (Darier's case), and in Janowsky's case the lashes fell out. In Couillaud's case the palpebral conjunctiva was granular. In Janowsky's and Morris' cases the external auditory meatus was filled with warts. Some cases have had general but moderate enlargement of the lymphatic glands. There is often falling of the hair to a considerable extent, but in Morris' case, a woman of thirty-five, there was a thick growth of white hair on the face, and to a less degree on the chest and abdomen. Of course all these symptoms are not seen in high development in any one case, but a large proportion of them are associated in a moderate degree; thus in my Atlas case the mucous membranes were unaffected, and the hands and feet only very slightly involved.

It is a question whether certain ill-developed cases should be included, such as Pringle's,* where there was itching and pigmentation for years before papillary growths appeared; or Du Castel's,† where there was itching of the legs and thighs, and then the skin on the abdomen got hard and dry, with a lichen-like condition of the skin with pigmentation. Leslie Roberts' and Joseph's cases can certainly be excluded; but there is a case, reported by myself in 1881, which should, I think, be included—a young and vigorous man of twenty-two, in whom the pigmentation and soft papillary growths were highly developed, but the hands and mucous membranes were free.

Morris showed on February 8, 1899, at the Dermatological Society a case of an elderly woman, in whom, soon after an operation for the removal of some tumor on the shoulder and glands from the axillæ, there appeared extensive highly crusted

* *Brit. Jour. Derm.*, vol. ix. (1897), p. 76.

† Du Castel, *Annales de Derm. et de Syph.*, vol. vii., 1896.

warty growths, which extended over a large area back and front, on and above the breasts, reaching nearly to the axilla; in the right axilla itself was a moist papillary growth very like an exaggerated keratosis.

The explanation which occurred to me was that the operation produced nerve injury, analogous to that of the abdominal sympathetic which is supposed to account for keratosis nigricans.

Couillaud thinks that papillomatosis may occur without pigmentation in keratosis nigricans. Certainly, as in Rasch's case, papillary growths may occur in the axillæ, etc., without pigmentation, but whether the pathology is essentially the same cannot be determined, and it is better for the present to keep such cases apart from the pigmented ones.

Etiology.—The disease is rather more frequent in women. Two-thirds of the cases occur after the age of forty-six, the oldest so far was seventy-two (Hallopeau), the youngest thirteen (Barski), and in this boy it began when only two years old. Isidore Dyer * had a case of an Italian child, æt. seven, but the date of origin was unknown. In Pringle's case, a woman of twenty, the lips were affected as long as she could remember. In my first case it came out suddenly at the age of fourteen; the age of eighteen also has been recorded. In all these young cases the general health has been undisturbed, except in Pawlof's † case, which began at eighteen, six years after a fall and injury to the epigastrium; but in the older ones the case is far different, and serious visceral disease has been present in a large proportion; of these, cancer of the stomach and liver are the most frequent. In my Atlas case hypertrophic cirrhosis had been diagnosed, and the skin condition had been going on twelve years, and the papillary growths had become much larger.

In Janowsky's case exposure to great heat was the apparent cause, and it got well spontaneously. In one of mine exposure to great cold brought it on, and it had persisted for eight years without other changes. In other cases no clew to its

* *New Orleans Med. and Surg. Jour.*, October, 1898.

† Pawlof. *Monatsh. f pratk. Derm.*, vol. xxxiv. (1902), p. 269, with some references and microscopic plate. Abs. in *Brit. Jour. Derm.*, vol. xiv. (1902).

origin could be obtained. In one of my cases the patient died from exhaustion from pyloric obstruction, but no cancer could be detected during life; nevertheless, his skin improved, the warts disappeared, the mucous membranes got nearly well, and the pigmentation less. There was no autopsy.

Pathology.—The most plausible view is that there is disturbance of the abdominal sympathetic from pressure of cancerous growths or from other cause, but no anatomical proof has been furnished. As far as the skin changes are concerned, all are now agreed that it does not originate in the prickle cell layer, and therefore it is incorrect to call it acanthosis, since the horny layer and papillary portion of the cutis are most concerned in the process, and Darier, Pawlof, and others consider that the papillary change is the primary one.

Anatomy.—The main changes are the increased thickening of the horny layers and stratum granulosum, and to a slight degree of the prickle cell layer; enlargement of the papillæ of the skin from down-growth of the interpapillary processes, while the soft and hard papillary growths of the skin are of the usual structure. In Hallopeau's case increase of the elastic fibers was a marked feature, while Boeck found them diminished, and described the pigmentation as deepest in the three deepest layers of the epidermis, chromatophorous cells being abundant. Further details may be found in Darier's, Boeck's, and other articles. In my own case of 1881 the condition is shown in the accompanying plates.

Diagnosis.—The most striking features are the presence of pigmentation in the neck and flexures with papillomatosis, especially in warm and moist positions, a widespread keratosis with warts, discrete and diffuse, and analogous changes affecting all the visible mucous membranes.

The disease which resembles it most closely is keratosis vegetans, or Darier's disease, and the comparison between the two affections is given under the latter.

In Addison's disease the localization and tint of the pigment is somewhat different; there is pigmentation of the mucous membranes and an absence of keratosis and papillomatosis.

Prognosis.—Although one case has got well spontaneously, and another after the removal of a cancerous uterus, and one or two have become ameliorated as far as the skin is concerned, a cure can scarcely be hoped for in most cases by direct means.

Where there is visceral disease, the effect on the patient's life and health will depend on that.

Treatment.—If a cause be detected, such as cancer of the pylorus or elsewhere, and if it is in such a position that it can

Fig. 28.—Skin of abdomen. × 120. *a*, corneous layer dipping down into the rete mucosum; *b*, rete thinned; *c*, pigment in the deep layers of the rete.

be removed, the skin will get well, in all probability, as happened in Spietschka's cases, where, a few months after the removal of the uterus for deciduoma malignum, the skin got quite normal. Otherwise nothing can be done except to remove any

Fig. 29.—Two papillary growths in the skin of the neck. × 60. *a*, corneous layer; *b*, rete mucosum; *c*, pigmented layer; *d*, downgrowth of the rete between the papillæ.

warts or papillary growths which, from their position, are a special annoyance.

C. Boeck thought his case improved under the administration of suprarenal capsule extract, but the fact that no disease of the capsules has ever been found does not lead one to expect much from this treatment.

KERATOSIS VEGETANS.*

(Follicularis.)

Synonyms.—Darier's disease; Psorospermose folliculaire végétante (Darier); Keratosis follicularis (White); General hypertrophy of the sebaceous system (Lutz); Ichthyosis sebacea cornea (E. Wilson).

Lutz and White of Boston gave the first clear description of this disease, but Darier's work on its pathology brought the subject into general notice.

It is very rare, only about twenty-five cases being on record up to 1902, and it is probable that some of these cases were really examples of keratosis nigricans, as there are so many remarkable resemblances between the two affections.

Symptoms.—The disease begins most commonly on the face or head, less frequently on the trunk, but ultimately the regions chiefly affected are the scalp, face, feet, the neck, back of the trunk, especially near the spine, the flanks, flexures, anus and vulva, axillary and inguinal regions; in the last part, it reaches its acme of development. The symmetry is striking, and the distribution, as a whole, is the same as keratosis nigricans.

* *Literature.*—Intern. Atlas, Plates XXIII., XXIV., and XXV. Schweninger and Buzzi's case. Darier's Histology in "Psorospermose folliculaire végétante," *Ann. de Derm. et de Syph*, vol x. (1889), p. 597—a histological study, with plates. Thibault's "Thèse de Paris," 1888, with the same title, gives the clinical account of Darier's case. "Keratosis Follicularis," J. C White, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vii. (1889), p. 201, and 1890, second case, p. 13. Lustgarten, *loc. cit.*, January, 1891—this was the case recorded by Bulkley in *New York Med. Jour.*, with a review of the subject. "Vier Fälle von Darier'scher Krankheit," C. Boeck, *Archiv f. Derm. u. Syph.*, vol. xxiii. (1891), p. 857, with histology. "Ueber die Darier'sche Dermatose," Buzzi und Miethke, *Monatsh.*, vol. xii. (1891), pp. 9 and 59. *Brit. Jour. Derm.*, vol. iii., 1891, gives abstract of two Russian cases, "Ichthyosis Sebacea Cornea" in "Diseases of the Skin," 1897, p. 358, by E. Wilson. "Contribution à l'Étude de la Psorospermose Végétante," T. de Amicis, "Bibliotheca Medica," D. ii. Heft 3, 1894, plates. J. T. Bowen, "Keratosis Follicularis," *Amer. Jour. Cut. Dis.*, vol. xiv. (1896), p. 209, gives references to 20 cases. E. Doctor, *Archiv f. Derm. u. Syph.* (1898), p. 323, gives references to date, though his own two cases should be excluded in my opinion. Gilchrist, *The Johns Hopkins Hospital Reports*, vol. i. and reprint.

One of White's cases began as dry brown patches at the sides of the forehead, others as pin's-head smooth firm papules of normal color, which enlarged and became slightly hyperemic; in both stages they resembled keratosis pilaris. When still larger they become hemispherical with polished hard covering, varying in color from dull red to purplish dusky red, brown, brownish-black, and somewhat resemble lichen planus. The most common of the primary lesions is a lentil to pea-sized papule of a dirty red color, with a firmly adherent grayish-brown, black, or gray, horny crust inserted into it. This little sebaceous horn on removal leaves a conical, funnel-shaped depression in the little papule, which is seated at the pilo-sebaceous follicle. Similar plugs may be embedded in the skin, without a projecting portion above the surface. These plugs, whether above or below the surface, can be squeezed out by the thumbnails like the contents of molluscum contagiosum, which they most nearly resemble, but they are not translucent, and are not inflammatory-looking. The lesions are discrete at first, but increase in numbers until they become confluent in some parts, and the patch is then covered with a brownish, greasy layer, rough to the touch from the irregular projections. The disease progresses slowly as a whole, but there may be acute exacerbations, when a fresh area of considerable size may be invaded with innumerable non-inflammatory papules with very small gray crusts; thus the whole upper limbs were affected in a single attack in Darier's case.

As time goes on the papules increase, not only in numbers, but in development, forming reddish elevations, with a plugged apex or crateriform opening. The horny crusts sometimes reach a considerable size; in one of White's cases one horn projected three-quarters of an inch.

The base of the papule may be denuded of its epidermis, and sebum or sebaceous pus squeezed out. Large masses or tumors may be formed by confluence, especially on the scalp, face, trunk, and axillæ, but reach their highest development in the hypogastric and inguinal regions and the anal cleft, where they undergo papillary development. This vegetating condition, as Darier calls it, constitutes the second period of the disease. In Darier's case there was also a horizontal band of extreme confluence just above the umbilicus. In Lutz's case,

at the level of the breast, was a pedunculated, flask-shaped growth, resting on the chest wall; it was six inches long, and three inches in diameter at the base and one at the summit. Other cases have had similar tumors, but not so large. They are apt to be superficially ulcerated at the follicular orifices, with copious discharge of highly offensive sero-pus. The denuded surface is very painful, from exposure to the air and friction of adjacent surfaces, or of the clothing, preventing sleep and motion, and wearing the patient out. The tumors may also suppurate *en masse*.

The patient also suffers from excessive sweating, and this produces sodden and often decaying epithelial masses which are inexpressibly offensive. Partly also as a result of the hyperidrosis, in some cases there is considerable thickening of the horny layers of the palms and soles, sometimes minutely nodular, as on the palms of Darier's case, where there were small yellowish points on the papillary ridges, from thickening of the horny layer, evidently an inchoate stage of the diffuse condition. Over the knuckles and finger-joints * the horny layer is thickened with minutely granular whitish appearance. The nails are often affected, longitudinally striated or fissured, indented and brittle, or, according to Boeck, thickened and broadened even where the neighboring skin is healthy.

Seborrhea of the scalp is common. In Thibault's case, where the scalp was affected the surface was covered with abundant dirty yellow, fatty scales, and when these were removed the scalp had a lobulated aspect; the nutrition of the hairs was unaffected, but they were united into brushlike clumps.

In Boeck's cases the scalp was covered with warty masses and fatty crusts, and seborrheic eczema was present, but was readily cured.

Even where there are no papular, nodular, or warty lesions the epidermis is thickened in its upper layers, in many regions of the body; on the face, the back of the hands, of the forearms, and the neck; this produces a deepening of the natural lines of the skin, a more or less distinct ridging, and some discoloration, from a merely dirty to a brownish hue. These

* Fig. 4, Plate XLIV., of Author's Atlas shows these appearances; the nails also were striated. The case illustrated by the figure was associated with hyperidrosis, probably of arsenical origin.

changes are seen in their greatest degree of development in the neck and the flexures generally, in the axillæ and groins; the surface is marked with deep longitudinal folds of a bister or grayish-black color, exactly resembling keratosis nigricans.

Itching is present in the majority of cases, usually moderate, but sometimes severe. The oral mucous membrane has been affected in several cases; thus in Fabry's, æt. sixty-seven, there were numerous elevations on the lips, tongue, and cheeks. Hallopeau also found on the inside of the lips and cheeks numerous isolated and acuminate hypertrophied mucous glands in the shape of nodules, from which mucus could be expressed. The tongue also was villous, and nodules like those on the skin of other parts may also be found at the commissure of the lips and at the external auditory meatus, blocking it in some cases (Schwimmer), again like keratosis nigricans.

Etiology.—Two-thirds of the cases have been of the male sex, and the majority have begun before the age of sixteen. Several of the cases which are reported as beginning in advanced life are open to the suspicion of the diagnosis not being correct.*

Three of Boeck's cases were father and two sons, and White's cases were father and daughter; with the former the disease began on the shoulder, where his knapsack rubbed it.

Pathology.—The pathogeny of the disease as a whole we are unable to conjecture. But the pathological process which produces the lesions appears to be a keratosis mainly of the mouths of the pilo-sebaceous follicles, as Bowen, Darier, and Lustgarten have shown, and also, to a minor degree, of the sweat follicles; the result of an anomaly in the keratinization process. Darier's theory of psorospermosis is abandoned even by himself, and the bodies he supposed to be psorosperms are acknowledged to be hyaline degenerated epithelial cells, but as their presence appears to be a constant feature of the disease, they are of some diagnostic value. They are round cells surrounded by a refracting double-contoured thick membrane; within it is a granular substance with what looks like a nucleus and nucleoli. They contain keratohyalin, and are found at the base of the horny

* The cases I should certainly omit are—Kronig's and Doctor's; Jarisch's is very doubtful. The cases in advanced life are Fahry's, Schwimmer's, Hallopeau's, etc., and their diagnosis is also questionable. Hallopeau's was remarkably like a keratosis nigricans.

plugs more abundantly than in any other disease of a similar nature.

Anatomy.—The anatomy has been studied by nearly all who have reported cases, but the observations of Darier, Bowen, Boeck, and Lustgarten may be especially mentioned; a *résumé* is given in Unna's "Histopathology." The results are those given above.

Diagnosis.—The most prominent features are the early onset in the majority of cases, its commencement, as a rule, on the face or scalp, its symmetry, its predilection for the flexures, neck, and mucous orifices, and the peculiar primary lesion like molluscum contagiosum or lichen planus at the first glance, but on closer inspection, instead of being pearly at the base, it is of a dirty red color, and crateriform when emptied of its expressible contents. There are also papules with horny covering compared to keratosis pilaris and sometimes wartlike. The continuous but slow development and the vegetating offensive tumors of the inguino-pubic regions are diagnostic in advanced stages. There is a remarkable resemblance between it and keratosis nigricans, in position, symmetry, pigmentation, and lesions of the mouth and other mucous orifices.

The main differences are the constant presence of Darier's bodies (pseudo-psorosperms) in keratosis vegetans, the onset being nearly always on the face or scalp, while the hands are less frequently affected, especially as regards the palms, and the mouth and tongue are less frequently involved. The primary lesions are different, with crusted and not such a purely horny covering, and although there are minute horny papules, there are not many like common warts. And in only one doubtful case (Fabry's) was there carcinoma of the stomach.

Hyperidrosis is generally present. Minor differences are that it usually begins in early life, males are far more frequently attacked than females, and it shows a distinct family prevalence and apparently even heredity, unless contagion be the real explanation.

In keratosis nigricans the primary lesions are common warts and papillary growths, the pigmentation is much blacker and more extensive, the mouth more constantly and severely affected; the place of onset is either the neck, back of the hands, or inside of thighs; the skin is dry and warty, and the thickening, where not warty, is more extensive in area, being often

correlative with the pigmentation. The scalp is very little if at all affected. Women are more frequently attacked than men; most cases begin after forty, and only four cases so far, up to 1902, have commenced under twenty. There is no family prevalence, and in a very large proportion of adult cases there has been very serious visceral disease.

The difficulty is that, except the character of the primary lesions and the Darier bodies, none of these differences are constant.

But while there are many resemblances of keratosis vegetans to keratosis nigricans, the relations between the former and keratosis follicularis contagiosa of Brooke are still closer.

The main differences are the absence of psorospermlike bodies in Brooke's case, no papillomatous growths and no greasiness, or offensive odor, and the lesions are easily curable but very liable to return. All these discrepancies might be due to Brooke's cases being an early stage of keratosis vegetans. Brooke's disease is evidently contagious, while K. vegetans is said to show a family prevalence and heredity. This heredity may only be apparent, and contagion from parent to child the real explanation.

The resemblances of the two diseases are—both begin in early life as a rule. In both there is diffuse thickening of the epidermis, so that the natural lines of the skin are deepened; both have spiny growths, which when forcibly removed leave the orifices in the follicles patulous. The head and neck is a favorite place of attack; and finally, the same cases have been claimed for both diseases.

Prognosis.—No case has yet been reported as cured or even materially benefited by treatment; it is slowly progressive, with tendency to aggravation rather than amelioration, but without much injury to health as a rule.

Treatment.—Nothing hitherto devised has exercised more than a temporary amelioration of the condition except as regards the scalp, where improvement ensues under the same treatment as that for seborrheic eczema, to which the reader is referred. Bowen found an ointment of sulphur, salicylic acid, and daily washing produced marked improvement. Offensive secretions from the axillæ and groins could be controlled by antiseptics of the iodoform class, such as europhen or loretin, or formalin

three per cent. in starch powder, sulphur baths, etc. The effect of thyroid in ichthyosis suggests that it might be useful in this disease, five grains of the extract or one grain of the colloid being given once a day to commence with, and the dose increased as the patient became accustomed to it. I am not aware that it has been tried.

Keratosis Follicularis Contagiosa (Brooke).—Brooke* claims as previous examples of the very rare disease he describes, the acne sebacée cornée (Cazenave), acne cornée (Leloir and Vidal), and ichthyosis sebacea cornea (Wilson), already assigned to keratosis vegetans; ichthyosis follicularis (Lesser), and Morrow's † keratosis follicularis.

While there is much ground for believing that Brooke's follicular keratosis is a mere variant or an early stage of keratosis vegetans, it is provisionally described separately until the connecting links are more certainly identified. Clinically, also, the disease has resemblances to lichen spinulosus, but the latter is not contagious, and does not show family prevalence.

The disease occurs most frequently in children, among whom it spreads by contagion, and sporadically it is seen in adults.

It is symmetrical in distribution, attacking chiefly the neck, especially the nape, the shoulders, and extensor aspect of the limbs; the trunk to a less degree, the face, buttocks, and flexor aspect of the limbs. In most cases it spreads slowly and continuously from above down.

In Brooke's type case it began on the nape, as little black spots, which developed into papules giving a dirty yellow and eventually brown hue to the affected area. The black specks projected, and comedo-plugs and small spinelike growths were produced.

The first change was a thickening of the horny layer, so that the natural rhomboids of the skin were accentuated. In each of these minute black specks appeared, generally in threes, but only one developed a papule, and on this a spine formed on the top, and some of them became slightly inflamed. Some-

* Brooke, "International Atlas of Skin Diseases," Fascic. vii., Plate XXII.

† Morrow, "Keratosis Follicularis," *Jour. of Cut. Dis.*, vol. iv. (1886), p. 257.

times the spines were long and thin, like bristles, at others short, thick, comedo-like plugs, but they were always firmly rooted, and left a gaping follicle when extracted, the surface being as rough as a nutmeg-grater.

The larger papules were fleshy, and often inflamed like acne vulgaris pustules, while others resembled acuminate warts. In parts they were agglomerated into rough, lumpy patches, and the papules and surrounding skin had a dirty yellowish-brown hue. The disease was most highly developed on the outer surface of the posterior fold of the axillæ, where the agglomerated papules looked like a mass of small warts, from the top of which projected curved horny plugs two or three inches in length.

Out of seven children six became affected, evidently from contagion, and in another family three children were attacked. Brooke had two other cases also girls, æt. thirteen and six years. Graham Little * has shown two cases in one family (a third was affected) to the Dermatological Society. Barbe † has had two boys, æt. seven and a half and eight and a half respectively; and Elliot ‡ of New York a Russian boy, æt. fourteen.

Pathology.—The lesions have been examined by Vidal and Leloir, Robinson in Morrow's case, and Brooke agrees with their observations.

The process is a hyperkeratosis, affecting chiefly, but not exclusively, the pilo-sebaceous follicles, the sweat pore spirals, and the deep and superficial furrows.

The hyperplasia extends to the other epithelial layers, especially to the stratum granulosum. Some irritant not yet determined apparently starts the process, and the contagious character of the disease points to its being a living organism, but it has not been yet discovered. Neither Brooke, Wickham, nor Unna could find psorospermlike bodies in Brooke's case, and in this respect it is unlike White's, Darier's, and other cases of keratosis vegetans, in which they were constantly found. Brooke also considers that clinically it differs from keratosis vegetans

* *Brit. Jour. Derm.*, vol. xiii. (1901), p. 417.

† *Annales de Derm. et de Syph.*, vol. ii. (1901), p. 535; also p. 422, case by Baudoin and du Castel, a male, æt twenty.

‡ Elliot, *Jour. Cut. and Gen.-Ur. Dis.*, vol. xii. (1894), p. 362

in the absence of papillomatous growth and the freedom from greasiness of the skin and offensive odor, the skin being really dry and harsh. See the diagnosis of keratosis vegetans for further details, and the criticism of the differences.

Brooke cured his cases by inunctions of iodid of mercury in mollin (lard saponified with caustic potash, to which some fresh lard and a little glycerin is added). In both Barbe's cases, there being evidence of congenital syphilis, he gave them mercury and iodid of potassium, and the lesions disappeared, though they returned in a week, when the treatment was stopped.

ANGIOKERATOMA.

Deriv.—*ἀγγεῖον*, a vessel; *κέρας*, horn.

Synonyms.—Lymphangiectasis (Colcott Fox); Telangiectic warts (Dubreuilh); Lichen télangiectasique; Télangiectasie verruqueuse (Brocq).

Definition.—A disease of the extremities characterized by warty-looking growths, which develop on dilated vessels, in persons with a chilblain circulation.

This is a very rare and not very important disease, but with definite clinical characters. The first published case was by Wyndham Cottle.* A case of my own was alluded to under Verruca in the first edition of this work (1888), and cases have since been described in detail by Colcott Fox, Mibelli, Dubreuilh, Pringle,† Fordyce,‡ etc. Mibelli's name is the one which has gained acceptance.

All the patients were, or had been, the subjects of chilblains, and dark spots the size of pin's points to pin's heads, evidently

St. George's Hospital Reports, vol. ix. for 1877–78, 758, with colored illustrations.

† Pringle has given a very complete *résumé* of the disease with good colored illustrations and bibliography (except Cottle's case) to date, in *Brit. Jour. Derm.*, vol. iii. (1891), p. 237, August, September, and October numbers. My own case was given in the November number.

‡ Fordyce, *Amer. Jour. Cut. Dis.*, vol xiv. (1896). Colored illustration of scrotum affected, and references Cases are now getting too numerous for separate mention. Joseph reported 6 cases from Berlin, Audry 34, and Escaud 25 cases from Toulouse; Tommasoli 21.

vascular, developed as an attack of chilblains was subsiding. These venous dilatations persisted for an indefinite time, and new ones formed winter after winter, with and without fresh chilblains. They were discrete at first, but most of them were irregularly grouped, and ultimately blended into a small patch from one-eighth to one-third of an inch in diameter, which became distinctly elevated above the surface into a small convex mass, and at the same time horny points developed amongst the vascular dilatations, giving the appearance of warts with venous vascularity at and round the base, and telangiectic warts they were supposed to be, by myself and others, until their development was traced, in other cases, from venous points, and the cornification was shown to be a secondary feature. None of these lesions show the slightest tendency to spontaneous involution, but the larger ones persist with very little change, and fresh vascular points form each winter and develop into the warty stage, or go to increase the size of adjacent warty lesions. These lesions occur on the fingers and toes, and on the parts of the hands or feet immediately adjacent, never extending much beyond the knuckles or roots of the toes. In Sangster's case the ears were affected. The palmar or plantar surface may be involved, but only to a comparatively trifling extent as a rule, but in Saint-Philippe's case they were abundant on the palm, nearly all the lesions being on the dorsal surface of the phalanges; and in a well-marked case all the stages of development may be seen at once. There are no subjective symptoms, but the larger ones bleed easily, and they are always worse in cold weather.

Variations.—Further experience has shown that the vascular lesions are not limited to the extremities of the circulation, and are not, therefore, always in etiological relationship to chilblains.

Thus Zeissler's case, in addition to typical lesions on the hands and feet, presented nevus-like patches and pedunculated vascular tumors on the forearms, legs, thighs, and ears. In Fordyce's case the scrotum only was affected, chiefly at the back and sides, the lesions being in lines following the folds of the scrotum. In W. Anderson's case,* a man æt. thirty-nine, the vascular points and growths had been developing from the age of eleven to twenty-two, and had since been unaltered. They

* *Brit. Jour. of Dermat.*, vol. x. (1898), p. 113.

affected the whole surface, except the face, palms, and soles, in innumerable puncta and papules of a purplish-red color, from a point to a hemp seed in size, most developed on the scrotum and inner side of the left thigh.

In all these cases the verrucose element was nearly or entirely absent. As associated conditions it may be mentioned that Zeissler's and Fordyce's cases had leukodermia, and in Anderson's and Dubreuilh's cases there was congenital deformity of the fingers. All of them were males.

Etiology.—In cases limited to the extremities all the patients have been young, and the disease has dated from childhood. Most of them have been of the female sex, and all have been subject to chilblains, the lesions having always started immediately after an attack, and been aggravated each winter. Some cases have been associated with Raynaud's disease. In the trunk cases the facts are too few for generalization, but so far they have been of the male sex and chilblain circulation has not been an etiological factor.

Pathology.—As a result of repeated chilblain inflammation, capillary vessels become dilated in the papillæ, followed by chronic inflammatory changes in the papillary layer, and overgrowth of the epidermic layers above them, when the disease is in the extremities, but when in the scrotum and trunk, most if not all of the secondary changes are absent.

Anatomy.—This has been investigated by Colcott Fox, Mibelli, Pringle, and others.* The observations of the last two agree in the main.

There was great thickening of the stratum corneum, stratum lucidum, and rete mucosum, the last chiefly at the margin of the diseased area, and in this layer were large irregular lacunæ, some still with blood in them.

In the upper part of the papillary layer were copious leukocyte infiltration, increase of the fibrous tissue, and general dilatation of the blood-vessels. The subpapillary layer was only slightly affected in Pringle's case, but more so in Mibelli's; the latter's showed less leukocyte infiltration and he thought there were dilated lymph spaces.

W. Anderson found in his trunk case varicose dilatation of the papillary blood-vessels, thinning or absence of the rete layer above them, while the horny layer was unchanged or thinned. Thrombi were present in many of the vessels. Fordyce found some hypertrophic changes in the horny and prickle cell layers as well as the vascular changes.

* Wisniewski gives good colored plates of microscopic appearances, *Archiv f. Derm. u. Syph.*, vol. xlv.

Diagnosis.—The occurrence of warty-looking growths with a purple vascular base, and accompanied by purple dots on the extremities and ears of a person with the chilblain circulation, is absolutely diagnostic. The mode of development of the warty lesions from the aggregated vascular points would distinguish them from true warts. In the trunk case only the venous dilatations might be present.

Treatment.—The most effectual treatment appears to be that successfully employed by Pringle, viz., electrolysis of each lesion, into which a needle attached to the negative pole is introduced, with a current of three milliampères, until coagulation of the blood in the vessels is produced. To prevent the formation of fresh lesions in the winter, general invigorative measures should be adopted, and the patients encouraged to take as much active exercise as their circumstances permit.

SCLERODERMIA.

Deriv.—σκληρός, hard; and δέρμα, the skin.

Synonyms.—Scleroderma; Hide-bound disease; Sclerema or Scleroma adultorum; Scleriasis; Dermato-sclerosis; Chorionitis; Sclerostenosis; *Fr.*, Sclérème des adultes, Sclérodermie; *Her.*, Hautsclerem.

Definition.—A subacute or chronic disease characterized by extreme induration and rigidity of the skin.

The first case known is that of a Dr. Curcio of Naples in 1752.* A few isolated cases were subsequently recorded by Lorry, Henke, Alibert, etc., but it was not until Thirial's paper in 1842, recording two cases under the name of "Sclérème des adultes," that the attention of the profession was attracted and the disease generally recognized.

There are three classes of cases:

1. Where the skin affection is diffuse and symmetrical.
2. Where it is circumscribed, usually called morphea.
3. Mixed cases, where there is a combination of the two forms.

Although they all have the same anatomical basis, the first

* Quoted by Willan, p. 208, under the name of ichthyosis cornea, Colcott Fox, "Note on the History of Sclerodermia in England," *Brit. Jour Derm.*, vol. iv. (1892), p. 101, gives references to many of the old cases.

two differ clinically and etiologically in many important points, and are therefore described separately.

DIFFUSE SYMMETRICAL SCLERODERMIA.*

This is a very rare disease, but owing to its striking peculiarities, many cases are on record. I have had seven females and five males under my own care, and have examined many more.

This form presents itself under two phases: *infiltration*, or, as it is more commonly but incorrectly called, *hypertrophy*, and *atrophy*, clinically represented by swelling and then shrinking of the skin. The infiltrated form is the early stage, and may be hard from the first or edematous; the shrunken is a sequel of the swollen stage, which has then generally been edematous in the first instance. The disease frequently comes on after exposure to cold or wet, often with pains in the joints, or there may be no symptoms before the stiffness of the skin sets in. This may spread in a few days over a large part, or even the whole of the body surface, or again, the disease may be so insidious and gradually progressive that the patient can scarcely mark its commencement, and it is progressive for many years. There is no elevation of temperature, unless from complications, and there is often very little or no disturbance of the general health. The commonest positions for the stiffness to be first felt are the back of the neck, the chest, shoulders, and arms; at all events, in some part of the upper half of the body with few exceptions.† This stiffness increases in intensity and extent either slowly or rapidly, traversing a great part of the trunk, limited below by a horizontal line, of which the edge is imperceptible to the eye, and to the touch is ill-defined, merging gradually into the healthy skin. Sometimes there is a zone of dilated vessels marking the boundary of the healthy and unhealthy skin. The scalp, face, neck, and upper limbs may all become involved, each joint being fixed as the skin over it becomes rigid. In the hard cases the volume of the part affected

* "Lectures on Sclerodermia," by the author, *Lancet*, vol. i. (1885), pp. 191, 237, 927, 975.

† Finlay's case began in the feet and legs and spread upwards, *Brit. Jour. Derm.*, vol. i., August, 1889. In a case of Ewart's with a mild form of Raynaud's disease, it was centripetal, beginning in the hands, feet, and face.

is increased, and the infiltration of the skin makes it extremely tense. The muscles * may be implicated, resembling rigor mortis, and the whole skin is so hard that it suggests the idea of a frozen corpse without the coldness, the temperature not being more than a degree or two below the normal. No pitting can be produced by pressure, and all attempts to pinch it up are futile; but when the finger is drawn across with firm pressure, it makes a white streak with pink borders, and the normal color is only slowly regained.

When the face is affected it is Gorgonized, so to speak, both to the eye and to the touch. The mouth cannot be opened; the lids usually escape, but if involved, they are either half closed, or when contraction takes place, drawn widely open, but immovable in either case. The effect of the disease on the chest walls is to seriously interfere with respiration and flatten and almost obliterate the breasts, and upon the limbs, to fix the joints in a more or less flexed position from the shortening of the distended skin.

In some instances the mucous membrane of one or the other of the cavities is affected, including that of the mouth, tongue, palate, pharynx, esophagus (judging from occasional dysphagia), larynx, and vagina. In short, no part of the body surface is exempt, though the palms and soles are perhaps the most rarely involved, escaping sometimes when the whole of the rest of the body is affected. While the disease displays a decided preference for the upper portion of the body, it is most erratic both in what it includes and in what it passes over, but is always symmetrical in distribution, though not in intensity, and the legs are never affected without the arms, though the contrary is often noticed. The surface of the skin may be very little altered to a casual observer, but closer inspection shows that the natural lines are obliterated. There may be some patchy erythema at first, and later, minute vessels are dilated and form telangiectasic tufts and striæ, contrasting with the rest of the surface, which is paler than normal as a whole, and in parts is quite white from the obstruction of the circulation, of which many of the symptoms are a consequence. Pigmentation is

*The muscles may be affected independently of the skin, though usually the skin and other tissues are simultaneously involved. Cases are recorded by Goldschmidt, Westphal, Méry, Thibierge, etc.

often present, striated, mottled, or diffused over a large area, and varying from a pale fawn up to a deep brown or almost black.

Subcutaneous tubercles have been observed in a few cases (Hutchinson, Gaskoin, Tresidder, and myself *); they appear to me to be of the same nature as "rheumatic nodules," occur especially over bones, and disappear spontaneously; and it is probable that they would be often found if specially looked for. According to Méry and Brissaud there is sclerosis of the viscera and all soft parts in some cases; but, except as regards the muscles and myocardium (Méry), I am not aware of any anatomical proof. The hair falls off in some cases, but not permanently, and the nails may also be involved.

Sensibility is rarely affected, but both increase and decrease have been noted. In a case which came under my notice very severe apparently neuritic pains occurred at intervals, preceding attacks of acute dermatitis, but not limited to the affected skin. There was also great tenderness of the surface. Pruritus is more frequent, and in one of my cases was a very troublesome symptom.

The secretion, both of sweat and sebum, is diminished in proportion to the intensity of the affection, and may be quite absent, so that the skin gets rough and peels, and on the legs may be almost ichthyotic from the dryness of the cuticle; in the atrophic form the palms and soles, however, are generally moist.

Edematous form.—In this set of cases edema instead of induration is first observed, not, however, of the usual doughy kind, but a stiff edema, resembling, as Wilson puts it, the pitting produced by pressing the finger into a bladder of lard. After this has lasted a variable period, amounting to some weeks or months, the edema becomes absorbed, the skin begins to shrink, acquires a dried or ivory-white color, and the atrophic stage is reached. This is the course of most of the edematous cases, and I believe of all of them, while it *is very doubtful if the cases which are primarily hard and infiltrated ever become atrophic*, but this requires further observation.

*Jane E., æt. thirty-nine (U. C. H., females), and Tresidder, *Lancet*, June 1, 1895, p. 1378. In Eichoff's case the nails were brittle, and there was a horny mass between the nail and its bed, *Archiv f. Derm. u Syph.*, Heft 6, 1890.

The atrophic condition is not so widely spread as the edema which preceded it, and is more frequently confined to the face and the limbs, especially the upper, but the symmetry is retained, and the alteration is much more obvious to the eye. In the face the skin, from pressure-atrophy of the fat and muscles, is stretched over the bones to which it may be directly adherent, the lips are shortened, the gums shrink from the teeth and lead to their falling out, and the nostrils are compressed. As in the other form the lids generally escape, but the hard edge of the lid has been known to produce ulceration of the cornea, or their contractions may keep the eyes permanently open. The stretched skin, the emotionless features, with the pallor relieved only by telangiectasic striæ, give the countenance a ghastly, corpselike aspect.

The same process affecting the limbs—the arm, for example—reduces the limb of an adult to the size of a child's, ankyloses the joints, and distorts the hand, so that the third and fourth fingers are curled up into the hand, the first and second are bent at the first phalangeal joint, while the thumb phalanges are overextended; this is called **"sclerodactylia."** * The limb looks and feels like an ivory carving; the skin is even more unyielding than in the infiltrated form, but from shrinking, not distention. In consequence of the tension of the skin over the joints, ulcerations easily ensue upon slight injuries, and necrosis of the phalanges † may result, sometimes with great pain. In a case recorded by Leredde and Thomas there were multiple and very painful erosions and ulcerations of the affected skin. When the tendon of the biceps is involved it forms a tight cord across the front of the forearm and flexes the limb at a more or less obtuse angle. On the other hand, in one of my cases ‡ it missed out a piece of skin at the flexure of the elbow and knee, olecranon and patella, on each side, and left

* Sclerodactylia begins in some cases at the finger-tips and extends upward very gradually, and more often is part of general sclerodermia. It may develop in association with Raynaud's disease without other symptoms of sclerodermia.

† Zambaco and Bérillon relate such a case, and Zambaco not only compares it with mutilating leprosy, but actually regards the case as marking a transition from sclerodermia to leprosy. *Annales de Derm.*, etc., vol iv. (1893), p. 753.

‡ Jane E., æt. thirty-nine (U. C. H., females).

comparatively free movement in those joints, while those below them were fixed. Owing to the ivory-white color and to the shrunken parts being below the healthy skin, the end of the diseased surface is easily seen; but the disease may affect the deeper tissues, somewhat beyond the visible border, which is irregular, and may be fringed with a pink or violet zone of small dilated vessels. Pigmentation affects these cases more frequently and intensely than in the infiltrated form.

The course taken by the two forms differs somewhat. The tensely infiltrated cases tend to clear up, sooner or later. Im-

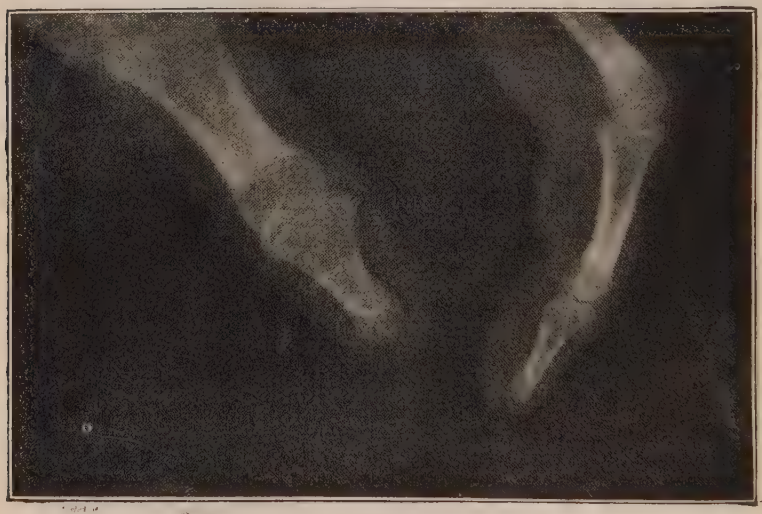


Fig. 30.—From a case of Sclerodactylia which I treated with Dr. Dercum of Philadelphia, to whom I am indebted for the radiogram, which shows that the joints are unaffected while the soft tissues have shrunk.

provement sets in gradually; the infiltration is slowly absorbed; the skin becomes gradually softer, and after some months, or even years, regains its normal elasticity. Whether any of these cases degenerate into the atrophic form is not quite settled.

Progress towards recovery is not, however, uninterrupted. A slight chill (and the patient is very sensitive to cold) may aggravate the disease, and even extend the process, and the patient, from internal causes also, may feel his skin tighter on some days than others. In the contracted form recovery is less frequent; the disease often remains stationary for years, and in

rare cases fresh portions of the body may from time to time be affected, and the patient may sink under it with emaciation and exhaustion. Improvement may eventually set in, if judiciously treated, and the induration may entirely disappear; but nothing can restore the atrophied tissues, and some of the joints having become permanently ankylosed, more or less deformity is left. The ankylosis is, however, never bony, but entirely due to the fibrous contraction. This was well shown in the section of a finger of a patient of mine who died from heart disease, and in whom the disease, in the atrophic form, had been present twelve years; the induration, however, having quite cleared up for some years before death, leaving only the deformities and thinned skin. If the disease last long emaciation sets in, and the whole vital powers appear to be diminished, so that the patient more easily succumbs to other diseases to which he may be exposed.

Complications.—Acute rheumatism is the most common complaint which may precede or accompany the sclerodermia, and cardiac valvular disease may be present, either with or without the joint manifestations of rheumatism. Myositis with pain and contractures of the limbs have been repeatedly observed; in Kaposi's case * nearly all the muscles of the trunk and limbs were invaded, and the sclerodermia spread over the whole body, with great emaciation from the constant pain. Peripheral neuritis may occur. Enlarged thyroid with or without exophthalmic goiter may coexist, as in the cases of Jeanselme, Booth, Leube, and Kahler, but atrophy of the thyroid, often unilateral, with fibroid changes, is more frequent. In Hektoen's case the thyroid weighed only fourteen grams instead of twenty-two. Necrosis of the phalanges has already been mentioned, and Ullmann showed a case with necrosis of the bones on each side of the face. Muscular atrophy † apart from sclerosis is not infrequent, and syringo-myelia ‡ in a few instances, with the

* Kaposi, *Annales de Derm.*, etc., vol. ii. (1891), p. 881.

† Dreschfeld, *Med. Chron.*, Manchester, January, 1897, p. 263. Two cases, one with progressive muscular atrophy, the other with trophic ulcers. Schultz of Brunswick found extensive lesions of the anterior roots of the spinal cord.

‡ Mendel met with a case of a woman, æt. forty-one, in whom after suffering from Raynaud's disease to the extent of coldness and lividity for two years, symptoms of Morvan's disease appeared, followed by atrophic

respective lesions in the anterior cornua, and gliomatosis have been found.

Of associated skin lesions Raynaud's disease is the most common, and may precede or accompany it; many have had syncopal attacks affecting the fingers for years before the sclerodermia. Sclerodactylia may follow Raynaud's disease without other symptoms of sclerodermia. Other vaso-motor disturbances, such as transitory swellings, throbbing in the epigastrium, and frequent vomiting, occurred in one of my cases. In another eczema capitis was present in the height of the sclerodermia, but yielded to the usual treatment; acne and urticaria also occur, and especially the factitious form, which is characterized by its slow development and unusually long duration. In a case under Bettmann * with commencing sclerodermia, on the chest and back, where the sclerodermia had not yet appeared, the factitious urticaria took several minutes to develop, and lasted for five or six days without change. Lupus erythematosus preceding the sclerodermia has been observed by Cavafy, Pringle, and Brissaud, and by Hallopeau developing in a sclerodermic patient.

Children.—Although the name adultorum has been appended in contradistinction to sclerema infantum, with which it has no connection, sclerodermia frequently occurs in children, and bears the same character among them, except that it tends to run a more acute course both in onset and termination, while the atrophic phase is less often developed. In a child of twelve who came under my care through the kindness of my colleague, Dr. Eustace Smith, the whole body surface was involved, except the palms and soles, within a fortnight, and there were endo- and peri-carditis; yet within three weeks some diminution of the induration set in, though it was twelve months before she was quite well. Many run a much slower course than this.

Etiology.—Women are much more prone to this disease than

sclerodermia, with marked bronzing of the face. *Deutche. med. Woch.* No. 34. 1891. Abs. *Brit. Jour. Derm.*, vol. iii. (1891), p. 94. Other cases are Herringham's case, Clin. Soc., *Brit. Med. Jour.* November 4, 1899, p. 1290; Tresidder, *Lancet*, June 1, 1895, p. 378; *Clin. Jour.*, May 8, 1893, p. 313; S. Mackenzie, Henton White, *Lancet*, April 25, 1896, p. 1136; Ewart, Harveian Society, *Lancet*, February 15, 1902, p. 450.

* *Berlin klin. Wochensch.*, April 8, 1901. Abs. *Brit. Med. Jour.*, *Epitome*, April 27, 1901.

men, in the proportion of three to one, and young and middle-aged adults are the most frequent victims; but thirteen months * and seventy years † are the extremes of age on record.

Among other predisposing causes previous attacks of Raynaud's disease and acute rheumatism and erysipelas play the most important part, probably from such subjects being unduly sensitive to cold; privation and exhausting emotional conditions are also said to be the causes. Chills, especially after having got the clothes drenched, have been the exciting cause of many cases. In one case (Pick) ‡ it followed directly after exposure to the sun on a long march. Most instances from these causes are comparatively acute. Many patients have had previous good health up to the time of the sclerodermia, and no cause could be assigned for it, and the slow, insidious cases generally baffle investigation as to their origin. Bancroft's § observations of the concurrence of filaria sanguinis with sclerodermia are probably only coincidences. Touton records a case, the result of injury from a splinter of wood. In Abraham's case a fall on the back immediately preceded the onset. Brissaud quotes a case after an injury to the skull, and other cases make it probable that injuries may be exciting causes.

Dana thinks all infectious conditions may give rise to sclerodermia, and the fact that cases have occurred in connection with tuberculosis (Besnier and Ehlers), erysipelas (Chaufford and Schaper), diphtheria (Marsh), scarlet fever (Pringle), lends some support to this view.

In a case in Eichhoff's clinic there were ulcers round the nails

* Isambert, *Gaz. Hebd.*, 1863, p. 840; Faivre, *Annales de Derm.*, vol. ix. (1898), p. 179; and Norman Moore, *St. Bart.'s Hospital Reports*, vol. ix. p. 70, records a case of two years. Grasset in the *Iconographie de la Salpétrière*, No. 5, 1896, describes a case of a youth of eighteen in which an atrophic sclerodermia began at two years of age, progressed up to twelve years, and had since remained stationary. The physical development had been quite stopped, while the brain and rest of the nervous system were intact. He was only 4 ft. 6 in. high, weighed fifty-three lbs., and was like a skeleton with the skin stretched tightly over it.

† Dr. Fletcher's case, *Clin. Jour.*, March 31, 1897. Another case of seventy-two was that of a man in whom the disease affected both legs (Dr Sidney Roberts, Sheffield Med. Chir. Soc.). Jane R. (U. C. H.) was sixty-seven years.

‡ *Viertelj. f. Derm u. Syph.*, 1884, Heft i., p. 227.

§ *Lancet*, February 28, 1885, p. 380.

from favus, and from these sclerodermia started and gradually spread over the whole body surface. The favus was cured with pyrogallic acid and the sclerodermia retroceded.

Pathology.—Of this we know very little. Most of the symptoms are referable to obstruction, on the one hand, to the arterial blood supply, and, on the other, to the venous and lymph flow.

The symptoms, which differ so much in many cases, mainly depend, in my opinion, upon the varying degree in which the obstruction affects one or other of these vascular systems.

The disease is not one of lymph obstruction alone, or we should get the condition of elephantiasis arabum, as Kaposi points out, but there can be little doubt that it plays an important part; and if the arterial supply were diminished, there would not be the excessive hyperplasia which is seen in elephantiasis. The obstruction is apparently, in great part, due to the cell effusion, which forms a sort of sheath round the vessels, apparently an endo- and peri-arteritis, but what the original defect is which starts this is obscure. The sclerosis is the outcome of the endarteritis. The most plausible and generally received theory is that of a defect in the nervous system, high up necessarily, since the disease affects the face, and not improbably in the vaso-motor center, but how this nerve influence produces these special phenomena cannot be explained satisfactorily.

Brissaud,* after discussing all the theories put forward, concludes that a primordial disturbance of the great sympathetic originates the disease.

Mott was unable to find any lesions in the central nervous system. Leredde and Thomas regard the dermato-sclerosis and accompanying arteritis as probably due to a toxin. The co-existing changes in the thyroid found in some cases have led to that being supposed to be the *fons et origo mali*, as in myxedema, but against this is the fact that, while atrophy is most common, hypertrophy of the thyroid also occurs.

Anatomy.—The skin of diffuse sclerodermia has been examined anatomically by Förster, Neumann, Kaposi, Schwimmer, Babes, Chiari, Fagge,

* "Pathogenesis of Sclerodermia," *La Presse Médicale*, No. 51 (1897, p. 285. Full Abs. in *Brit. Jour. Derm.*, vol. ix. (1897), p. 367, with many valuable references.

Unna, and others, the skin having been taken from both the living and dead subject, and though differing in some particulars, probably from the disease not having been in the same stage in all, the results agree in the main, and may be stated as follows:

The changes are almost entirely in the corium and subjacent tissues, pigmentation of the rete, as well as the corium sometimes, being the only epidermic change as a rule, though Neumann found downgrowth in one case. The vessels are narrowed by the pressure of layers of cells of varying thickness which surround the vessels like a sheath (Rasmussen, Kaposi, etc.), and in Schwimmer's case, examined by Babes, there was narrowing from concentric hypertrophy of the media and intima. What leads to this accumulation of cells is not known, and it cannot be shown whether they are derived from the lymph channels round the vessels or are emigrant cells from the blood-vessels, but they do not appear to be of inflammatory origin, as all other evidence of inflammation is wanting. Masses of cells are especially abundant round the sweat and sebaceous glands, the hair follicles, and in the panniculus adiposus. These tend by their pressure to produce atrophy of the subcutaneous cellular tissue, but they are never seen in the papillary layer (Neumann).

The blood-vessels also, while well filled with blood and broad at the lower part of the corium, are bloodless near the papillæ, and are also here thin-walled and diminished in number.

These changes in and around the vessels are probably the primary and leading feature, to which the other anatomical lesions are secondary. These latter are increase of the connective and elastic tissues of the corium, the meshes of which are closer together than usual, and hypertrophy of the organic muscular fibers. There is ectasia of the sweat glands, the cell masses are abundant round them, and eventually produce destruction of the acini and of the hair follicles, and atrophy of the fat and subcutaneous cellular tissue from the pressure of the cell proliferation; and nothing else intervening, the condensed overgrowth of the connective tissue of the corium may be directly adherent to the fascia or periosteum. This description of the secondary changes applies to the later stage of the disease.

A. Mott was unable to find any lesions in the central nervous system, in the peripheral nerves, or in the posterior root-ganglia in a case of Galloway's which had suffered from sclerodermia for years.

Unna* examined a case of three months' standing when the disease was at its height, and states that "the main process is a hypertrophy of the pre-existing collagenous bundles all through the cutis, which leads to simple pressure atrophy of the vessels as well as of the epidermis structures."

Diagnosis.—The wooden induration and immobility of the skin and subcutaneous tissues, occurring symmetrically over a wide area, with or without the ivory color supervening, and the surface otherwise so little altered, are conditions peculiar

*"Histopathology," p. 1110.

to sclerodermia, with the sole exception of sclerema of the new-born, in which there is induration with great coldness of the surface. This, and the age of the patient, would be obvious distinctions, thirteen months being the youngest age of any recorded case of sclerodermia, so that there can really be no difficulty in diagnosis from the affection of the new-born. In slighter degrees of development the difficulty of pinching up the skin being greater than the infiltration would account for is characteristic. For the diagnosis from the rare disease *xerodermia pigmentosa* see that disease, while most of those exceptional cases of so-called *general atrophy of the skin* are really, in my opinion, examples of atrophic sclerodermia (see Atrophia cutis). There remains only one disease, even rarer than sclerodermia, which may give rise to some doubt, namely, *diffuse primary or secondary cancer of the skin*—"cancer en cuirasse" of Velpeau. If secondary, it often begins as nodules; this and the previous history would remove all doubt. But in the primary cases it may be difficult; the slow, continuous spreading, the lancinating pains and tenderness, the neighboring inflammatory edema, the ulceration of the lesions, and involvement of the glands, with the more rapid course to marasmus and fatal cachexia, are all points in which it differs from sclerodermia, and would guide to the correct diagnosis.

Prognosis.—Speaking generally, the disease, as a rule, tends to get well spontaneously, but it is impossible to predict how long any case may take; rarely less than twelve months is required for complete recovery, though improvement may begin in a few weeks; on the other hand, the hardness may last several years, with exacerbations and remissions. The swollen are much more favorable than the shrunken cases, and, in my opinion, those which are indurated from the first are more favorable than those which are edematous, as they are less likely to become atrophic. As long as there is induration with distention, hopes of complete recovery may be entertained; when atrophy has set in, although, either as a result of treatment or spontaneously, the skin may get soft and mobile again in a few cases, it can only be after some years, and the subjacent tissues have then become so permanently damaged that more or less deformity and crippling remain. More frequently, in atrophic cases, general emaciation sets in, and eventually the patient dies

marasmic, or falls an easy victim to intercurrent disease of the lungs, kidneys, etc.

Treatment.—The indications are to guard the patient against cold, and so prevent aggravation, which nearly always ensues after exposure to chilling influences; secondly, to improve the general nutrition; and thirdly, to restore the circulation in the ischemic area.

For the first, the patient should be clothed in flannel, never allowed to go out in cold winds, and draughts be carefully guarded against.

For the improvement of nutrition, which suffers generally as well as locally, cod-liver oil and ferruginous and other tonics, which may be suitable to the individual, are the most important. Care must be bestowed on the digestive organs, both for the sake of improved assimilation, and also because flatulence materially aggravates the discomfort of the patient, when the trunk is affected. Iodid of potassium, arsenic, mercury, and other so-called specifics have been tried extensively and found useless; and mercurial inunction has been distinctly injurious in some cases, and even in cases in which it has been apparently successful, the result was probably due to the friction with an oleaginous substance and not to the mercury.

For the third, shampooing should be systematically and diligently employed to the affected parts, either after Turkish, but not vapor baths, as they are too depressing, or where Turkish baths cannot be obtained, with oily substances, such as neat's foot or olive oil, or simple ointments. Massage thus carried out will often restore mobility, even in very long-standing cases. Galvanism is strongly recommended by some, and may be of service sometimes, probably by improving the circulation.

Thyroid extract has been tried because of the not unusual co-existence of atrophy of the thyroid, but with very meager success,* but Lancereaux and Paulesco had a case of recovery in four months, the patient having been previously unable to work for two years, with iodothyrin, commencing with 50 centigrams and increasing to 2 or 3 grams. Salicin and salicylate of soda appear to have been of great benefit in the earlier stages. Where only a limb requires treatment the Tallerman (superheated dry air) local baths would be useful.

* See Osler on "Thyroid Extract Treatment of Diffuse Sclerodermia," *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xvi. (1898), p. 127.

CIRCUMSCRIBED SCLERODERMIA.

Synonyms.—Morphea (*Gr.*, *μορφή*, form, or more probably, as Wilson suggests, a blotch); Keloid of Addison.

Morphea is the term in general use for this variety, which is still regarded by many authors as a disease separate from sclerodermia, but most dermatologists have been convinced, by Hilton Fagge's paper in "Guy's Hospital Reports for 1868," of its close clinical relationship to sclerodermia, and my own observations * have shown that they are anatomically related. Circumscribed is more common than diffuse sclerodermia, but is still a rare affection.

Symptoms.—While its general characteristics are the same in all cases, it varies very much in many of its details, and presents itself in two forms, **Hypertrophic** and **Atrophic,** and occurs in *patches* and *bands,* the patches being the more common. In cases in which there are atrophy and pigmentation, only patches are present.†

In a typical case, one or more patches, from half to two inches in diameter, appear gradually without symptoms, and, therefore, unless they are in an exposed position, often without attracting notice until they are fully developed. Each patch is of irregular shape, of a dead white or old ivory-white color, bordered with a narrow violet, lilac, or pink zone, which close inspection shows to be made up of minute dilated vessels. The patches are level, or nearly so, with the surrounding skin, generally unilateral, sometimes distinctly arranged in the course of a nerve area, in the same way as herpes zoster, and may also be in herpetiform groups of small spots. A very extensive case of guttate spots on the limbs was shown by Pringle.‡ They appear anywhere upon the trunk, but especially on the breasts; on the head and face, in the domain of the fifth, especially the supraorbital branch; and on the limbs most frequently of all, the lower being affected more often than the upper. As a rule,

* *Path. Trans.*, vol. xxxi. (1880), p. 315.

† Author's Atlas, Plate XLVIII., shows both the band and patch and herpetic forms, and Plate XLIX. an early and late stage of the supraorbital form in the same patient. Hutchinson's *Archives*, especially vols. v. and vi. (1894–5), contain several interesting cases, some illustrated.

‡ Derm. Soc. of London, February 4, 1894.

there is no difficulty in pinching up the affected skin, as it is not adherent to the subjacent tissues, and feels like parchment or stiff leather, according to its thickness, which may be greater or less than normal, varying even in the same patch. The surface is dry, the cuticle cracks sometimes, but more frequently it is quite smooth from the obliteration of the natural lines and the absence of hairs, unless the patch contracts towards the center, when there will be minute radiating corrugations. When once it is developed the diseased area may remain stationary for a long period, and then slowly fade, the skin gradually resuming its normal appearance; or the patch may grow at the circumference by the formation in its neighborhood of minute, pearly white, slightly depressed atrophic spots, about one-sixteenth of an inch across, which gradually enlarge, thicken, and ultimately coalesce with the major patch. In a case of P. A. Morrow's extension took place partly serpiginously with a pigmented zone preceding, partly by throwing out spurlike processes like a keloid. The duration of the disease varies from a year or two to eight or ten, and may be attended by the development of fresh patches from time to time, and the retrogression of some of the others. As a rule there are no attendant symptoms except slight itching (in rare instances severe) or the absence of sweating in the patch, but the sensibility is very rarely affected, and no special defect of health is demonstrably associated with it.

The *band* form differs in several respects from the patches. Usually single if on a limb, and adherent to the subjacent tissues, it is, as the new connective tissue contracts, sunk into a sulcus below the surface, but if not adherent, may be raised up into a ridge (*vide* Atlas case and *loc. cit.*). When affecting a limb it may extend the whole length of it, or of one of its segments, and often presents the aspect of a cicatrix, especially when it sinks deeply into the soft structure of the breast or is abruptly limited by the middle line on the forehead, or it may resemble a hypertrophic scar when it is raised to a ridge across a joint. In a case of very slight degree between the brows it was only a three-quarter-inch furrow like a deep frown on one side of the median line with slight induration. The supra-orbital cases generally form two parallel bands, one extending from the tip or root of the nose straight up the forehead to

or beyond the hair margin, but always keeping on one side, usually the left, of the median line, while the second band extends from the supra-orbital notch upwards. Other divisions of the fifth may present lesions. In W. Anderson's case * all three divisions of the right fifth, including the mucous membranes, were involved, and in a case of Hutchinson's only the areas of the two lower divisions of the fifth were implicated and followed by atrophy and arrest of development.

Morphea Atrophica. The small, white, slightly depressed spots which are the earliest stages of many patches are distinctly atrophic (*vide* Histology), but there are cases in which large tracts of skin are atrophic and yet they undoubtedly come under morphea, and are not infrequently associated with indurated patches. The following case is a good example, and will serve for a description of this variety:

Lizzie M., æt. nine, was first seen on January 2, 1894. In the left groin there was a band two and a half inches wide from the crest of the ilium in the mediolateral line to the linea alba. It was fairly well defined at the outer extremity, but shaded off towards the middle line. The center was white and glistening, but with a slightly mottled appearance, while the border was half an inch wide and of a dark fawn-colored hue. The affected area was slightly sunk below the normal skin, and when pinched up was distinctly thinned and dry. Above this, at the rib border, was a smaller oval patch with similar white area and pigmented border, but the atrophic appearance was less obvious. In the right groin was a patch of similar aspect, but the white center was distinctly thickened like parchment. At the epigastrium was a commencing patch, white in the center, with faintly pigmented border. Altogether there were seven patches on the front of the chest, but there were none elsewhere, and all except the right groin patch were atrophic. She had some ordinary psoriasis on the limbs, and subsequently on the morphea patches on the trunk, without any perceptible difference from its usual characters. The recognition of this condition as a variant appertaining to circumscribed sclerodermia is important, as such cases are frequently reported as a separate disease, and called idiopathic atrophy of the skin (*vide* that disease). In another case, with a large number of

**Brit. Jour. Derm.*, vol. x. (1898), p. 146.

both thickened and thinned patches, the patient was positive that the thinned patches began as thickened white ones.

Variations.—Almost every statement applicable to the generality of cases may be contradicted in exceptional instances. Thus pain and tingling, or itching, have sometimes preceded or accompanied the lesion; a patch may be evolved in a few days,* and involution, when it does set in, is sometimes rapid; † it may cover a large area or be very small; sometimes the patches are bilateral or even symmetrically disposed, and occasionally upon the median line; or again, instead of being confined to one region, they may be scattered over a great part of the body surface,‡ and are sometimes of large size, going quite round a limb, for instance. They may be very distinctly depressed below the healthy surface, especially in the center, from adhesion to the tissues below, or raised above it, sharply defined at the margin, or merging imperceptibly into the normal skin. In some cases there is deep-seated induration which may simulate scirrhus of the skin, especially if it is the abdominal wall.

The violet zone of dilated vessels is often absent, and the surface, instead of being an ivory white, may be, in parts, pink, lilac, or red from underlying vessels being seen through the thinned skin, or they may be tinted more or less deeply in various shades of yellow, brown, or even purple, green, and black.§

Many of these variations have been distinguished by various names, such as M. tuberosa, lardacea, maculosa, nigra, etc., but they are superfluous designations, and are deservedly falling into disuse.

In addition, pearly white, scarlike lines and spots, like true striæ and maculæ atrophicæ, may be associated with the more characteristic lesions, and telangiectases and pigment patches without induration may also be observed, which after a time either disappear or develop into the more characteristic lesions.

* Wm. M., aged eleven, East London Children's Hospital.

† Miss K., patch on nape, after remaining two years, got rapidly well after typhoid fever.

‡ A very remarkable case in large bands and curves, in great part symmetrical, is published in Hutchinson's smaller Atlas, Plates CXXXV. and CXXXVI.

§ Gaskoin's case, *Med. Chir. Trans.*, vol. lx. p. 113, is an extreme instance.

True keloid of Alibert * has occasionally supervened, but this is probably accidental.

Ulceration sometimes occurs. In a case under Tilbury Fox which I saw, all the patches, which were numerous on the trunk, ulcerated over their whole surface. In a girl of twenty with symmetrical morphea of the shins the larger patches ulcerated, but not deeply. Jamieson and Fox of New York also report ulceration of one or more patches; and Whitfield showed a case at the Dermatological Society of London in July, 1901.

In a case of Prince Morrow's † there were bullæ and widespread ulceration. A case of Sherwell's also had bullæ on a patch of morphea; and Hallopeau has had a similar case with many bullæ on and round the sclerodermia. It appears to be the rule that if one patch ulcerates, most of the others also ulcerate. Considering the amount of vascular blocking, the wonder is that ulceration is so rare.

Changes in other tissues are also occasionally observed, thus Streatfeild's case of fifth-nerve morphea was associated with exostoses of the lower jaw and palate of the same side. On the other hand, atrophy of the subjacent tissues and muscles sometimes ensues, especially in band cases, producing deformity in the case of a limb; the morbid skin, as in the diffuse form, may then be directly adherent to the periosteum. Some cases of hemiatrophy of the face are the result of previous morphea in childhood having produced arrest of development.

Whitfield showed a case at the Dermatological Society with true verrucose thickening of the epidermis in some patches and ulceration in others.

* Longbottom, age one, E. L. H., a large patch, two inches by one and a half developed, unnoticed at first, in right supra-clavicular region; it was excised and recurred; the upper portion was again excised and keloid developed here; this patch grew larger under observation in the way above described. After a time the corresponding position on the left side became of a general pinkish hue, with dilated vessels coursing over it; on this, small white spots, which gradually enlarged to the diameter of one quarter to half an inch, appeared and remained then unchanged. The case was under observation between seven and eight years. In January, 1885, signs of involution were observed in the oldest patch on the right side, but the keloid remained. In Addison's case of Eliz. Nicholls keloid followed a scald. In Hutchinson's case, p. 329 of "Lectures," keloid developed on the scars of some chronic eruption.

† *Amer. Jour. Cut. Gen.-Ur. Dis.*, vol. xiv. (1896), p. 419, very extensive and symmetrical distribution (illustrated).

Etiology.—It is more common in females than males, in a larger proportion even than diffuse sclerodermia. It may affect all ages after the second year; the patches are chiefly seen in young adults and the bands in children.

People of neurotic temperament are most frequently the victims, and prolonged anxiety, worry, or other causes of nervous depression appear to be predisposing influences; a case of mine with a large number of patches dated from a period of prolonged worry. Chills are a possible exciting cause, but much less frequently than in the diffuse form.

Local irritation appears to be an exciting influence sometimes, and perhaps, if carefully looked out for, would account for many that are otherwise inexplicable. Thus cases are recorded as occurring at the spots where the garters were applied (Fagge), following the application of a glister (Gillette), the friction of a boot,* a blow on the knee,† six months after Röntgen ray exposures (Barthélemy), etc.; and it is not improbable that some of the breast cases are due to the irritation from the edge of the stays, etc., and some neck cases to the friction of the clothing; no doubt the predisposition must be present also, but this applies to local causes for many other diseases. When all the above conditions have been taken into account, it will still be true that no adequate cause can be found to account for the majority of cases.

Anatomy.—The anatomy of circumscribed sclerodermia has been examined by myself; sections were made both of the early or atrophic stage, and also of the later condition. The results were as follows:

Epidermis.—There was no perceptible alteration in the epidermis, though, of course, there would be in the pigmented cases. In some sections there were a few leukocytes in the Malpighian layer.

* Hutchinson's case, "Lectures," p. 322.

† Simpson's case, *Brit. Med. Jour.*, June 7, 1884. Also in *Dub. Jour. Med. Sci.*, February, 1891, is recorded the case of a boy of eleven, sclerodermia on the left half of the body, the left side of the face, and the left extremities, followed a violent blow over the left hip. There was also atrophy of left side of the face and limbs, and alopecia in affected regions. In Leslie Roberts' case a fall on the abdomen was followed by induration at the site of injury, and in two years spread to the right shoulder and down the arm in isolated patches, following the branches of the median and radial nerves, and produced rigidity and contraction of the thumb and index finger. In a case of my own a blow on the center of the head in front produced a morpheic band, extending downwards on the forehead to the right of the median line.

Corium.—The papillæ were less prominent than normal. In many of the vessels of the superficial longitudinal plexus and papillary branches (Fig. 31, *a*) thrombi were found blocking the lumen; in some sections the thrombus extended into the minute branches going up to the papillæ, but

Fig. 31.—Portion of morphea patch × 60, showing papillæ obliterated and vessels at *a*, *a*, *a* blocked with thrombi.

more frequently the vessels lying horizontally were alone occluded. In one section a small dot, situated at the angle of bifurcation of the vessel, suggested an embolus.

There were always present numerous irregularly branched masses of cells, about the size of leukocytes, staining deeply with carmine, but taking rather longer to do so than the surrounding tissues, and except when

Fig. 32.—Blood-vessel in a patch of morphea surrounded by a dense mass of leukocytes.

grouped round the sebaceous glands, they mostly lay horizontally, corresponding to the superficial longitudinal vessels.

Blood-vessels could frequently be seen going into the mass, and in some cases they were connected with the vessels that had a thrombus beyond the cell groups; sometimes the vessel appeared to expand at these masses as if it were ruptured, and the cells were an effusion from it. In other sections vessels might be seen with cells round them (Fig. 32).

Branching from the cell masses, there was often a reticulum consisting of fine fibrils with well-defined borders and cells at intervals upon them,

like knots in a net. These cell foci were mainly, as has been said, round the superficial longitudinal vessels, the papillary branches being without them (except sometimes at their commencement). The process was rarely seen in the deep plexus, at least in the early stages, but the connecting branches of the two plexuses were more frequently involved, and this cell exudation might be seen occasionally, even in the upper layer of the fat.

Round the sebaceous glands and hair follicles the cell groups and reticulum were very abundant, chiefly, I think, because there are more vessels in the neighborhood of the glands. Cells occurred round the sweat duct, but the sweat glands, lying deeper, usually escaped; and in one of the sections, showing the cells round the duct, the gland below was normal, and just above it was a deep vessel of the corium running into a mass of cells.

In the later stage the essential feature was the increase of the connective and elastic tissues from the fibrillation of the cells seen in the early stage. The papillæ were nearly flattened out. The dense bundles of connective tissue pressed upon and obliterated many vessels, and caused atrophy of the sebaceous glands and of the sweat ducts, very few of which were seen in this stage. In one section, where the disease was of long duration, there was distinct increase in the connective tissue between the acini of the sweat gland, and the lining cells appeared to be pressed together. Although this implication of the sweat glands was exceptional, yet destruction of the ducts necessarily prevented the escape of the secretion, which was proved by the injection of pilocarpin subcutaneously close to the patch, when, while the skin around was quite wet with perspiration, the patch itself was quite dry, except in one very thin part, which lacked the smooth, parchment-like feel of the denser parts, and gave a slight sense of resistance to the finger passed over it. A zone about half an inch wide round the patch was, though moist, decidedly less so than the parts beyond. With anilin violet and iodin, no evidence of lardaceous change in the vascular walls was obtained; the cut ends of the muscular fibers in the wall of the vessels were quite discernible, though perhaps a little less so than in normal vessels.

Duhring has, since these observations, examined a soft, pliable patch from the back, of some months' duration, and found only "a condensation of the connective tissue of the corium with a shrinkage of the papillary layer." Babinski has also made observations on it.

The *Pathology* from my observations appears to be that, owing probably to some defect in innervation, cell exudation occurs round the vessels, narrowing the lumen, obstructing therefore the blood flow, and leading to thrombosis, and sometimes to a real rupture and effusion. Each atrophic spot seen near a growing patch is the base of a cone from which the blood supply is cut off, the violet zone being due to collateral hyperemia round an anemic area. The patch or atrophic spot

thickens by the fibrillation of the effused cells. Where the arterial supply is completely cut off, an atrophic spot only is produced; where it is only diminished, partial atrophy with connective tissue hyperplasia or morphea is developed.

Unna * has examined the superficial form which he calls card-like sclerodermia and finds a hyperkeratosis of the epidermis at the expense of the prickle-cell layer, but no epithelial after-growth. The papillary body is flattened, there is a layer of dilated tubular lymph spaces below the epidermis, which, filled with fluid, reflects the light and causes the milky opacity, while dilated vessels shining through the cloudy marginal zone give the bluish tinge.

Inside the patch which occupies the papillary and subjacent part of the cutis like a plaque, the capillaries and lymph spaces are dilated. The connective tissue cells are increased most abundantly in the neighborhood, but not in the immediate neighborhood, of the blood-vessels, which are unchanged, and there are no cells independent of the blood-vessels, but they are very numerous at the margin of the patch, and the lymph spaces are enlarged here and at other parts of the patch. The thickening of the patch is due to interstitial edema.

In the thicker form, taken from a not quite typical patch behind the ear, he found no epidermic changes, but the cutis changes, consisting of great increase of connective tissue bundles, extended to the adipose layer and included the coil glands. The papillæ were flattened out to a wavy line, and most of the capillaries were obliterated. The collagenous tissue was much increased from top to bottom of the cutis, narrowing the lymph spaces and blood-vessels and obliterating many of the capillaries; but subjacent to the epidermis there was dilatation of lymph spaces, but far less than in the superficial form. The coats of the blood-vessels were unaltered, but the adventitia merged into the surrounding hypertrophic collagenous tissue, and the latter stretched and elongated both the coil ducts and the hair follicles.

Unna thinks it improbable that collagenous tissue arises directly from the cells and their processes. The veins were much dilated at the margin and produced the bluish shimmer.

Diagnosis.—A well-marked case of circumscribed scleroder-

* "Histopathology," p. 1103.

mia can scarcely be mistaken for any other affection, the flat, ivory-white, circumscribed, violet-zoned, unilateral patches are so very distinctive.

Vitiligo or *leukodermia* is only a defect in pigmentation, and there is no change in the texture of the skin; moreover, it is dead white, and morphea has nearly always a yellowish tinge.

Morphea with raised patches might be something like some cases of *Alibert's keloid*, but keloid is more vascular, harder, and has often clawlike processes, which will distinguish it, and the latter would never have a nerve distribution.

The deeply indurated cases resembling scirrhus of the skin might be distinguished by the duration and slow development of the sclerodermia, and by the smoothness of the affected skin; pain from myositis might be present and make the diagnosis more difficult, but it would not be of the aching and lancinating character of scirrhus.

Kaposi describes some of the phases of the eruption of non-tuberculated lepra under the term morphea;* with these, the circumscribed sclerodermia has little in common, except that both are probably due to defective innervation.

The cases of M. alba, lardacea, and nigra, that Kaposi also puts down to the account of a local leprosy, seem merely to be examples of the affection we have been considering.

Some of the cases which have been described as hemiatrophia facialis, or unilateral atrophy of the face, are doubtless examples of fifth-nerve morphea, one such case has come under my observation; but others seem to be an independent condition, affecting all the tissues, and are due to defective innervation, and some are rather instances of arrested development, without the skin changes of morphea. Such a case was originally described by Romberg, and was subsequently seen and described by Virchow, Eulenberg, Charcot, and latterly Payne, who showed the man at the Pathological Society of London in 1881, when I saw him. His case is published, with photographs, in vol. xxxii. of the *Transactions*, p. 306.

Poore, Larde, Frémy, Hammond, Bannister, and Robinson have also published cases.

Mixed Sclerodermia. The cases on record are few in number, but have much interest, as they are links connecting the

* Hebra, vol. iv. p. 156.

circumscribed and diffuse sclerodermia. Some cases commence as diffuse sclerodermia, and the patches develop subsequently. Such was the classical case of Eliz. Nicholls,* first published by Addison; in this the diffuse sclerodermia was unilateral, subsequently morphea developed on the opposite side of the face, producing the appearance of hemiatrophy, and other patches came on the trunk.

In Gaskoin's case, already alluded to, patches first came, to the number of thirty, which were confidently ascribed to a mental shock during pregnancy. There was some defect in sensibility in the patches, and much itching. A year or two later she was exposed to cold winds, and edema followed. This gradually disappeared, and at the same time the patches, which had been concave, became level, and atrophic sclerodermia developed, spreading from the patches over the whole body surface except the head.

In a third case, under Dyce Duckworth, there were two patches the size of a penny on the left thigh, and some time after she got acute rheumatism, when the patches on the thigh spread and got hard, followed by sclerodermia of both arms and legs.

In a case of my own, a youth of eighteen, there were atrophic patches on the chest and abdomen, while the deltoid and triceps, especially on the left side, were distinctly indurated and stiff, but the skin over them was unaffected.

Such a combination naturally produces an irregular distribution of the diseased areas, but the course, pathology, and treatment are the same as in the ordinary types of sclerodermia.

Prognosis.—The majority, and perhaps all cases, ultimately get well, the patches leaving little or no trace of their existence; but the improvement, though occasionally rapid, is often very slow and almost imperceptible, and, as a rule, only occurs after the patch has been stationary for a long time. Band cases are much less favorable than patch cases. Two or three years is the time required for a good many cases to get well, but many take much longer, cases of twenty years' duration being known, and we have no data to guide us in predicting what course any particular case will run. Improvement occurs, according to Hallopeau, by the substitution of an erythema for discolored

* Plate XLIV., Syd. Soc. Atlas.

induration, and subsequently dark-brown pigmentation, finally leaving only thinning of the cutis. In one of my cases the thickened patches gradually gave way to thinning and pigmentation.

Treatment.—This is, unfortunately, very unsatisfactory; general measures of invigoration are desirable, as an improved general circulation is calculated to improve the local circulation. No known local means have been as yet proved to influence the disease for good. Galvanization has been suggested, but it should be applied in the neighborhood, and not over the patch, as anything that irritates the diseased area induces further thickening. The procedure is the same as for hyperidrosis. Brocq has had good results in eight cases with electrolysis.* Needles attached to the negative pole were introduced into the border of the patch for fifteen or twenty seconds, with a current of five to ten milliampères; patches at a distance from the one treated also improved. Darier has also had a successful case. Shampooing the limb or other region affected should be also employed in these cases, as in diffuse sclerodermia, and where the disease is over a superficial bone, as on the forehead, careful massage will often prevent the skin adhering to the bone and producing a disfiguring sulcus.

Neisser has obtained success by injecting a ten per cent. solution of thiosinamin subcutaneously near or under the patch. Herxheimer has also used it in three cases with advantage. In view of its efficacy in keloids and hypertrophic scars and the induration of chronic dermatitis, it is probable that it will be advantageous here also. I have not used it long enough to speak from personal experience. It failed in a bad case on the shins. (See Injection Treatment in Appendix for the formula, etc.)

* "Traitement des Sclérodermies en plaques et en bandes par l'électrolyse," *Annales de Derm.*, etc., vol. ix. (1898), p. 113.

SCLEREMA NEONATORUM.

Synonyms.—Sclerema of the newborn; Sclerodermia neonatorum; Induratia telæ cellulosæ; *Fr.*, Algidité progressive; L'endurcissement athrepsique (Parrot); *Ger.*, Das Sclerem der Neugeborenen.

Definition.—An induration of the skin, congenital or occurring soon after birth.

Like sclerodermia, the name is indicative of induration, but the pathology and symptoms are very different, and it is advisable to use this term to mark the distinction. Under the term sclerema neonatorum two distinct affections have long been confused, viz., "Sclerema" and "Edema" neonatorum. Sclerema * was first fully described by Underwood † and Denman at the end of the last century, and soon after a French physician to the Hôpital des Enfants Trouvés observed the affection now known as edema, but mistook it for Underwood's disease, and the error was perpetuated by other observers up to 1877, when Parrot ‡ pointed out that they were distinct affections, a view which is now generally acknowledged to be correct.

It may be primary or secondary, be present at birth, or come on within the first ten days of life, rarely later. §

The morbid process usually commences in the lower limbs, then spreads to the lumbar region, over the rest of the back, then to the chest, and then gradually over the rest of the body

* The first known case occurred at the Stockholm Hospital in 1718. According to the midwife it was born alive, and died soon after birth. It is recorded by Usenbenzius of Ulm, "Partus Octimestris Vivus Frigidus et Rigidus," in *Ephemerid. acad. naturæ cur. centuria*, ix., obs. 30, p. 62, December, 1722. Schurigii quotes the same case in his "Embryology."

† Underwood, "Diseases of Children" (first ed., 1784, p. 76), calls it "hidebound."

‡ "L'Athrepsie," by J. Parrot, p. 116 (Masson, Paris, 1887).

§ Three cases of a late chronic variety with paralysis are related by Angel Money, *Lancet*, October 27, 1888.

Soltmann, "Ueber Sklerema neonatorum." Reprint from article in Eulenburg's Real-Encyclopädie, 1889. Gives a large number of references.

Somma, "Lo sclerema dei Neonate," Naples, 1892. Ballantyne's "Diseases of the Fetus," vol. ii.

surface, so that it is generally universal by the fourth day; in a few cases it begins on the face and spreads from above down, or again it may stop at some point short of completeness. At first the skin is of a yellowish-white or waxy-looking, and feels like thick leather, but the whiteness gives way to a slightly livid tint, and the skin becoming adherent to the subjacent parts, as well as rigid, it can no longer be pinched up, and pressure with the finger produces no pitting. The skin is tense, loses its natural wrinkles, is cold and hard, and since the limbs are fixed and the child lies with the eyes closed and motionless, except that very slight movements may be discerned in the thorax and face, it resembles a marble figure, or as if it were in a state of rigor mortis. So rigid is the body that it may be raised with one hand, and will still retain the horizontal posture, without flexion. Browning * of New York records a case of sclerema with opisthotonos without any meningitis. The face is rarely absolutely rigid, but the stiffness of the lips and cheeks prevent sucking and deglutition, and the mouth cannot be opened, which has given rise to the erroneous idea that trismus was present. The pulse falls to sixty a minute; the respirations to fourteen or even ten, and very shallow; and the temperature is several degrees below normal; the cry is reduced to a feeble moan; and what little vitality remains is generally completely extinguished by the seventh day or even earlier. The congenital cases are either still-born or die within forty-eight hours.

In partial cases recovery may occur, but the induration may last for months. In A. Garrod's case † the disease began, the nurse said, three or four days after birth with purple patches of induration on the buttocks. When seen at seven weeks old, the induration was over the back of the trunk and limbs very symmetrically distributed and with islands of healthy skin; none on the anterior surface except small islets on the forehead. The induration took six months to disappear. The rectal temperature varied from 98.6 to 100.4. Similar cases are on record.

Etiology.—The primary cases are either congenital or begin in the first few days after birth, without previous illness; the

* *Jour. Cut. and Gen.-Ur. Dis.*, vol. xviii. (1900), p. 563.

† *Clin. Soc. Trans.*, vol. xxx. (1897), p. 129. A previous case was published in the *Lancet*, May 4, 1895, p. 1103.

secondary cases are the sequel of causes which depress vitality, such as diarrhea or other bowel complaints, or pulmonary affections, such as atelectasis or pneumonia, with extensive collapse. Parrot regards it as one of the phenomena apt to occur with malnutrition from bad feeding and defective hygiene—athrepsy, as he calls it in a word; and that this and overcrowding are predisposing causes. Underwood confirms this when he calls this essentially a hospital disease, at a period when hospital hygiene was much worse than at the present day.

Pathology.—The other writers having mixed up edema and sclerema their observations must be disregarded.

Langer, while distinguishing the edematous cases, regards the other cases as fat sclerema, and ascribes the sclerema to solidification of the fat. He states that the fat of the new-born melts at 130° F. and is solid at 89.6° F., while that of adults melts at 197° and solidifies below 32° F. This difference is due to the fatty acids being in excess of those in adults, as 31 per cent. to 10 per cent., and he states, therefore, that any cause which depresses the temperature below the solidifying point of the fat will produce the disease. In such cases there will therefore be no histological changes, but the theory is not entirely satisfactory and scarcely accounts for the congenital cases.

On the other hand, Parrot regards the condition as a consequence of desiccation of the tissues from the drain of the diarrhea, etc., and states that the anatomical changes are very definite and easily recognizable. He says:

"The skin as a whole is notably diminished and thinned, but the horny layer is unchanged, and only looks thicker by contrast with the thinned rete and corium. The outline of the rete cells is scarcely visible, as the cells are compressed into a compact mass. The connective tissue corpuscles of the corium are well defined, and the connective tissue trabeculæ appear more numerous and thicker than usual. The islets of fat are smaller, and the contents of the vesicles so diminished as to show the nucleus or even to leave the vesicle empty. The vessels are much contracted, especially those of the papillary layer, in which their lumen is invisible. There is, therefore, a drying up of the skin, thickening of the layers, and some diminution of the fat, but there is no true sclerosis, nor serous infiltration." Ballantyne's* observations confirm Parrot's, on the whole, except that there is, he thinks, an increase of the connective tissue which subdivides the fat masses into smaller clumps.

* *Brit. Med. Jour.*, February 22, 1890, p. 403.

Previous observers have either not found any changes or described those of edema neonatorum. The diagnosis, prognosis, and treatment will be considered in connection with edema.

EDEMA NEONATORUM.

Synonym.—Edema of the newborn.

Definition.—A subcutaneous edema, with induration, affecting the newborn infant.

This is a very rare disease in England, but is more common abroad, and we owe its delineation chiefly to French observers.

The disease may be present at birth or begins before the third day of life, with drowsiness; then the extremities, especially the legs, are swollen with edema, cold and livid. The edema spreads upwards to the thighs; the hands are next affected; and then the genitals and back. It is marked on the soles and nates, which parts are red and hard. Like all edema the swelling is greatest in the most depending parts, but pitting is only produced by prolonged pressure and the tissue feels hard or at least doughy.

The drowsiness becomes more marked, the pulse weak, the breathing short and shallow, and this feeble spark of life is often put out by some complication, such as pulmonary affections, especially those with collapse, diarrhea, or convulsions, and in a few instances, by parenchymatous nephritis.

Variations.—The edema may begin in the back or face and the swelling of the hands may follow immediately upon that of the legs. In very exceptional instances there may be a high temperature instead of a low one, and a jaundiced hue may replace the lividity shortly before death. Associated with it have been noted icterus, erysipelas, pemphigus, furunculosis, and Demme records purpura and disseminated gangrene.

Etiology.—It almost invariably occurs in infants which are premature or of feeble vitality from some other cause, and atelectasis is present in many instances. Soltmann suggests that puerperal infection may play a part. Bad feeding of the mother and child, and exposure to cold immediately after birth, are also fruitful causes of the disease.

Pathology.—This is not known, but presumably the condition

is directly due to the feeble circulation and defective aëration of the blood, at a period when vital resistance is always small. But this does not adequately explain the whole process. Léon Dumas * considers it analogous to phlegmasia dolens, and a thrombus in both femoral veins has been discovered in one case. Ballantyne † considers it comparable to adult anasarca, and that it may be of renal, cardiac, or pulmonary origin.

Anatomically there is invariably yellow serous effusion into the cellular tissue, and the fat is of remarkable density and of a yellowish-brown color. The liver is very large and the lungs congested, and Ballantyne found nephritis.

Diagnosis.—Sclerema and edema possess many factors in etiology and all the signs of depression of the vital organs in common, viz., lowered temperature; steadily increasing debility; imperceptible pulse; absence of the second sound of the heart. They differ in the following points: In sclerema, in the vast majority of cases, the disease is general; the skin is tense, hard, and waxy in color at first, unpittable, and adherent to the subjacent tissue. Edema is less general, the skin, markedly livid from the first, is not so hard, pits with firm pressure, can be pinched up, and the swelling is always greatest in the most dependent parts. In sclerema the joints and jaw are stiff; not so in edema, or only in a moderate degree. The early age of their occurrence will distinguish them from sclerodermia, of which no case under thirteen months has yet occurred. Barlow,‡ from a case of sclerema under his care, which was partial in its distribution and recovered, considers that the color of the patches in sclerema is "bluish-red or of a deep copper tint, while in sclerodermia either the color does not differ from the healthy skin, or is of a whitish-tallowy character." In a partial case which I saw with my colleague, Dr. Blacker,§ at five weeks old, the infant was in good condition generally, there was no discoloration except where the napkin came, and much of the induration was like plaques in the skin, which pitted with difficulty.

This distinction does not hold good for the majority of cases, for as Underwood pointed out in his original description the

* Quoted in *Lancet*, November 26, 1887, p. 1081.

† *Loc. cit.*, *Lancet*, 1890.

‡ *Clin. Soc. Trans*, vol. xvi. (1883), p. 262.

§ *Brit. Jour. Derm.*, vol. x. (1898), p. 87.

skin in sclerema is of a waxy or yellowish-white. But for the absence of pitting, Barlow's case appears more like edema. In Parrot's case sclerema followed edema neonatorum.

Prognosis.—Sclerema is invariably fatal if it is complete, the infant surviving for only a few days; but in a few cases it is incomplete,* and then recovery may take place. In edema the prospect is not quite so hopeless, though always serious, and the duration is usually greater than that of sclerema.

Treatment.—The indications are the same for both, viz., to raise the body temperature to the normal and to administer nourishment. For the first, the child should be wrapped in cotton-wool and surrounded by hot-water bottles in a warm room; or, where practical, a box apparatus, on the principle of an incubator, would be advantageous. The child, being unable to suck, must be fed either by passing a small stomach pump tube through the nose, injecting the aliment (such as peptonized milk and white wine whey), or by Scott Battams' more simple plan of injecting the food with a glass syringe, to the nozzle of which an india-rubber tube is attached, which is passed into the pharynx. Friction of the limbs with oil, rubbing towards the heart, is useful in the improvement of the circulation.

ELEPHANTIASIS.†

Deriv.—ἐλέφας, an elephant.

Synonyms.—Elephantiasis arabum; Elephant leg; Barbadoes leg; Bucnemia tropica; Morbus elephas; Pachydermia; Spargosis; Phlegmasia Malabarica; Hernia carnosa; Elephantiasis Indica; *Fr.*, Eléphantiasis; *Ger.*, Elephantiasis.

Definition.—A chronic endemic or sporadic disease, consisting of a hyperplasia of the skin and subcutaneous tissues, due to blocking of the lymphatic channels, and resulting in enormous hypertrophy of the affected part.

The term elephantiasis has been used as a generic term for diverse diseases, such as lepra (elephantiasis græcorum), der-

* Barr's case, *Brit. Med. Jour.*, May 4, 1889.

† *Literature.*—Author's Atlas, Plate I., a leg from Barbadoes, illustrates the smooth variety; Plate LI., Fig. 1, a sporadic case of the warty or papillary variety, reduced half-size to get it into the plate. Vincent

matolysis, the huge symmetrical lipomata which grow about the neck chiefly in chronic alcoholics, as well as the disease under discussion, with the single feature of the enlargement of some part as the only link between them; but it is better to restrict the term to the one affection for which it is fairly appropriate, and it will not then be necessary to use any specific addition, such as Arabum.

Symptoms.—The disease is endemic or sporadic, differing in the initial and intercurrent symptoms, but practically identical as regards the ultimate result to the affected part, except that in the endemic form usually the limb is very large and smooth, while in the sporadic form the surface of the limb is papillary and rough. The sporadic form alone occurs in England, and is one of the uncommon forms of skin disease. A congenital form also exists.

As seen in tropical or subtropical climates, where it is endemic, the onset is often attended with severe febrile symptoms, sometimes termed "elephantoid fever." There are intense lumbar pain, nausea, or even vomiting, and shivering, followed by high fever, and this again by sweating. If the leg be attacked there is erysipelatous-like redness and rapid swelling, with painful tension, from the great infiltration into the cellular tissue, and when the lymphatics are much involved, there is a clear or milky discharge. If the scrotum is the part affected vomiting is nearly sure to be present, with intense pain in the groin, testes, and along the spermatic cords, which are swollen, with external redness, and the acute formation of hydroceles, while the abdominal rings may be so much stretched by the swollen cords

Richards on "Elephantiasis Arabum" in Fox and Farquhar's "Endemic Skin and Other Diseases," App. VIII., p. 126 (Churchill, 1876). Lecture on "Elephantiasis Arabum," by Sir Joseph Fayrer (March, 1879); also *Path. Trans.*, 1879, and "Relations of Filaria sanguinis hominis to the Endemic Diseases of India" (a good *résumé*, with numerous references), *Lancet*, February 8, 1879. Writings by P. Manson in eighteenth issue of *Chinese Med. Rep.*, and many previous papers on filaria disease, showing life history of the parasite, and relation to E. Arabum and other diseases. "Die elephantiastischen Formen," F. Esmarch and D. Kulenkampff (Hamburg, 1885),—a richly illustrated monograph, in which elephantiasis is used in its widest sense for numerous hypertrophic diseases, congenital and otherwise. "Elephantiasis Arabum," Hans von Hebra (Wien, 1885). Manson's "Tropical Diseases," second ed. (1900), p. 505, for pathology, but the whole chapter on Filariasis should be read.

as to lead to hernia, after the subsidence of the swelling (Fayrer). Under suitable treatment the febrile symptoms subside, leaving the limb slightly larger than before. In some cases, although the periods of quiescence last for months, the paroxysms are severe; while in others again the paroxysms are of slight intensity, and at long and irregular intervals, and the growth is proportionately slow and less developed. In 3½ per cent. there is no fever, and in many the enlargement of the axillary and inguinal glands precedes the fever. In rare instances there is continuous increase without constitutional disturbance. In this country an attack, or repeated attacks, of erysipelas may be the starting factor, and there will then be corresponding febrile symptoms in proportion to the extent and intensity of the erysipelas; but in others the development is very slow, and constitutional symptoms are absent. No symptoms corresponding with elephantoid fever form a part of the morbid phenomena in this country, nor are cases of rapid or very extreme development seen here.

When pretty fully developed the limb presents the following aspect, taking the leg, which is the most common position, as the type: the limb below the knee is enlarged to three or four times its normal girth, and although some edema is present, it requires strong pressure to produce pitting, and the greater part of the increased bulk is solid, and generally extremely hard and unyielding.

Owing to the swelling of the tissues on each side of the natural folds these form deep sulci, especially marked at the bend of the joints, and the swollen parts being in contact, the surface is covered with a moist, slimy, and offensive fluid, consisting of decomposing sweat, sebum, and sodden epithelium. Reddish or deep brown pigmentation of the whole limb, deepest at the lower part, is generally present. The surface of the limb is quite smooth, if only the trunk lymphatics are blocked, but if the superficial ones are also involved, the surface will be irregular, with varicose lymphatics, which form wormlike projections or deep-seated vesicular protrusions upon it; or, as it usually presents itself in the sporadic form, in which there is chronic or recurrent inflammation of the surface lymphatics, there will be patches of hypertrophied papillæ, which form soft or warty, elevated plaques, covered with thick horny or sodden epidermis;

these are especially common on the dorsum of the foot, and there is boardlike hardness of the subjacent tissues.

As a rule there is no pain or other sensory disturbance, except during the febrile exacerbations, or from complications, of which the most common is eczema, chiefly seen in the smooth limbs, accompanied by much itching; varicose ulcers also are frequent. In the inflammatory attacks the pain, heat, and tension may be very great; sympathetic gland irritation is generally present, and the dilated lymphatics are tender and painful, and so turgid as often to rupture spontaneously in various parts of the limb, or to be opened by the patient himself, to obtain relief from the tension. The discharge is a clear or milky chyle-like and coagulable fluid, the loss of which may be a serious drain on the patient's vitality; while the weight or bulk of the limb is often so great an inconvenience that the patient is glad to have it removed.

Variations.—While in this country the vast majority of cases affect one leg, very rarely both, in countries where it is endemic both legs are often involved, and if only one, the right more often than the left; the scrotum and penis, or the labia and clitoris, are only a little less frequently affected. Filarial thickenings of circumscribed portions of skin sometimes occur, and even pedunculated tumors, chiefly on the anterior part of the thigh, are said to be not uncommon in Fiji and other places. Even in England other parts are occasionally involved; thus I have seen it in the arm, forearm, and hand, in a lad who had had repeated attacks of erysipelas;* in both ears in a woman who had suffered from eczema of, and behind, the ears on and off for twenty years; in the scrotum in a home case of Dr. S. Mackenzie, and in a case of my own where the man had lived in Smyrna; in the lips—chiefly in the upper one—in a male patient of Mr. Barwell, for which he tied the facial arteries without much benefit; while Hebra and Kaposi mention similar enlargement of the cheek and nose; and in India Vincent Richards saw the whole left side of the face, and Ghosal, the

* A well-marked case of hand and arm elephantiasis with papillary hypertrophy is published by Hoyer in the Buffalo *Med. and Surg. Jour.*, May, 1886, with woodcut. Thibierge also records a case involving the upper limb in connection with chronic scrofulous lupus and recurrent erysipelas. "Extrait des Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris," séance du 15 Mai, 1896.

female breast affected. In Felkin's case * a Eurasian woman, the upper segments of all the limbs and the whole trunk, except a small median portion back and front, were involved. It began in early life. Considerable improvement was produced by rest, massage, the constant current, and tonics. In most of these cases the surface is smooth, though often highly vascular.

It must be borne in mind that there are all grades of elephantiasis, from moderate thickening of the skin and subcutaneous tissue up to enormous enlargement, and similarly great variations in aspect exist, according to the papillary hypertrophy or lymphatic and blood-vessel varicosity, and their relative proportions.

For example, the scrotal tumor may be so large as to hang quite down to the ground, and some of them have weighed over a hundred pounds, the largest on record having been 224 pounds. On the other hand, in the form known as **"lymph tumors," "lymph scrotum, or nevoid elephantiasis,"** the enlargement is only moderate, but the lymphatic vessels and spaces are much dilated, make the surface irregular, and during the paroxysmal febrile attacks become turgid, and may rupture, discharging milky or serous fluid.

Congenital Elephantiasis.—The characters of most cases differ from the acquired disease. The most common is a vascular form, **elephantiasis telangiectodes,** applied by Virchow to rare cases of congenital origin, but later development, in which there is nevus development of the deep vessels, with overgrowth of the tissues from excessive nutrition. There is but little external change except enlargement, but the limb has a lobulated feel, and firm pressure empties the enlarged vessels temporarily, like squeezing a sponge. I examined and photographed a case of this variety by the kindness of Dr. Savill.† The condition approaches fibromatous enlargement in some respects. **E. lymphangiectodes** is another form, and has been associated with E. telangiectodes in one or two instances.

Moncorvo of Rio Janeiro ‡ has recorded a series of cases in infants which had developed *in utero*, but had increased after

* *Edin. Med. Jour.*, 1889, p. 779.

† *Lancet*, November 8, 1891 ("Hospital Mirror").

‡ *Annales de Derm.*, etc., vol. iv. (1893), p. 233; vol. v. (1894), p. 186; and vol. vi. (1895), p. 965.

birth. In most cases the limbs, though much deformed, were smooth like the adult endemic form. He never found any filaria, and attributed the solid edema to streptococci.

In Europe this kind of case is quite exceptional, but Mainzer * records such a case affecting the left upper extremity, both legs, the right foot, external genitals, etc. The cause was obscure. Meige's eight cases in four generations of "chronic hereditary trophedema" were of similar character. Nonne † published four congenital cases affecting both limbs. They were all from the same family, in whom nine members through four generations were affected, and there were papillary growths. In Spietschka's case ‡ the face, three limbs, and the genitals were affected. Barwell § has published an extreme case of congenital right-sided hypertrophy of the face.

The **persistent edema** of the face, sometimes called "solid edema," seen in the subjects of recurrent erysipelas or lymphangitis, is really only an inchoate form of elephantiasis. It has a superficial resemblance to myxedema, but lacks the complex symptoms of that disease, and the cheeks are pale instead of being telangiectic. It may be seen in the lower lip as a result of repeated or chronic ulceration of the lip, syphilitic or otherwise.

Etiology.—Elephantiasis attacks both sexes at all ages, but is more common in men, as three to one (Waring), and in adult and middle life. It may also be congenital. It is also much more common in the dark than the fair races, and is endemic in India and the Malayan Peninsula, in China and Japan, in Egypt and Arabia, in the West Indies and parts of America, while it occurs sporadically in all parts of the world, except in the Arctic or Antarctic regions. Damp malarious regions in the neighborhood of the sea are especially favorable to its development, and Manson thinks its distribution is identical with that of the mosquito; certainly removal from the endemic area is always advisable, and arrests the progress of the disease,

* *Deutsch. med. Woch.*, vol. xxv., July 6, 1899, p. 436. Abs. in *Brit. Med. Jour. Supp.*, September 2, 1899.

† *Archiv f. path. Anat.*, vol. cxxv. Heft 1, p. 189, illustrated. Meige's cases are in *Nouvelle Iconographie de la Salpêtrière* No. 6, 1899, p. 453. Abs. *Brit. Jour. Derm.*, vol. xii. (1900), p. 372.

‡ *Archiv f. Derm. u. Syph.*, vol. xxiii. (1891), p. 741, illustrated.

§ *Path. Trans.*, vol. xxxii. (1881), p. 282.

which returns if the patient goes back to the malarious district. Bad living is supposed to be an important predisposing element. V. Richards found that in 236 persons, in seventy-three per cent. one or both parents were affected; but from its pathology tropical elephantiasis is not likely to be hereditary, and the coincidence is probably due to their being exposed to the same influences. Similarly, leprosy and this form of elephantiasis have no relationship, but both occurring in similar climatic conditions they have been found in the same individual—as often as six per cent. in 636 cases (Vincent Richards).

Pathology.—The disease is consequent upon occlusion of the lymphatic channels of the part affected, independent of the cause or nature of the obstruction, and whether it is at the trunk or periphery of the lymphatic circulation.

In the endemic cases the researches of Manson, Lewis, Bancroft, and others, go to prove that the obstruction is due to the parent worm, filaria Bancrofti,* blocking up the main lymphatics of the part. Manson's account is as follows: "The parent worms live in the lymphatic trunks, discharge their ova into the lymph stream, by which they are carried to the glands and arrested there, until they hatch; the embryos then enter the general circulation along the lymph vessels, residing in some organ during the day and circulating in the blood at night; mosquitoes abstract them from the blood and act as the intermediary hosts, and transfer them to water, to reach man again when he drinks the contaminated fluid. Chylous hydrocele, chylous ascites, chylous diarrhea, lymph scrotum, as well as other affections, such as chyluria, varicose groin, and axillary glands, with hematozoa, are produced by partial obstruction of the lymph circulation in the glands, directly, by their size, or indirectly, by exciting inflammation.

"Varicosities of the veins, glands, and different lymphatics result, and the lymphatic circulation is carried on by anastomoses, enabling the embryos therefore to get into the blood; but where the obstruction is complete, either the vessels are so

* The filaria nocturna is the embryonic form of this, and is the original filaria sanguinis hominis discovered by Lewis; but other blood worms having been found, Manson re-named the first F. nocturna, while others are F. divina, perstans, Demarquaii, Ozzardi, and Magalhaesi. Only F. nocturna and perstans have a pathological importance.

distended that they rupture, and lymphorrhagia of a more or less persistent character results, either from the scrotum or leg, with varicose glands and filaria embryos in the glands, but none in the blood; or the lymphatics do not rupture, there is complete stasis of lymph, with accumulation on the distal side of the glands, with solidification of the tissues producing elephantiasis; the course of events being, Manson says, "parent female filaria in the lymphatic system of the affected part; injury of the filaria, hence premature expulsion of ova; embolism of lymphatic glands by ova; lymph stasis; recurrent lymphangitis, leading to inflammatory hypertrophy of the parts; here again, no embryos are found in the blood or gland lymph, as they cannot get past the glands, and the parent worms also die from the accumulation of lymph and embryos,"* and may produce abscess and lymphangitis. Interesting as this is, however, it is only one of many causes of obstruction to the lymphatics; in sporadic cases, in temperate climates, the same result is brought about in a different way. Erysipelas, either as a severe and diffuse cellulitis, or from repeated attacks, is one of the most common causes of lymphatic obstruction. Sabouraud † examined and cultivated the serum during the attacks of lymphangitis of a case of E. nostras, and invariably found streptococci of erysipelas, but the cultures in the intervals remained sterile. Phlegmasia dolens is another disease which may occlude the trunk lymphatics and lead to elephantiasis; while long-continued or repeated attacks of eczema of the leg are responsible for a certain number, though they are seldom extreme instances of the affection; in this form the peripheral lymphatics must be the first to get obstructed. In some cases, again, the pathological factor cannot be recognized, and we know only the result of the obstruction. Favoring influences are a pendulous condition of the part, *e. g.*, flabby breasts, and in the case of the lower limbs want of exercise, increasing the natural difficulty of the circulation in the dependent limb; in short, anything hindering the venous as well as the lymphatic flow.

* Manson finds that the embryos of three species are to be found in the blood stream: the filaria sanguinis hominis of Lewis and the filaria sanguinis hominis major and minor. The last two have been found in Africans; the first in Asiatics and Americans (*Lancet*, January 3, 1891).

† *Annales de Derm.*, vol. iii. (1892), p. 592.

Anatomy.—This has been studied by Virchow, Kaposi, myself, and many others, with general agreement. On section, the surface is yellowish-white, fibrous, and fatty; in some parts gelatinous, in others, white, or yellowish-white, lymph exudes on pressure. The chief change is in the subcutaneous tissue, which is enormously hypertrophied from increase of fibrous tissue in a more or less developed stage, most of it being distinctly in fibrous bands or networks, while other parts are gelatiniform, with soft fine fibers, and many nuclei and cells. This is contained for the most part in loculi composed of more advanced fibers; the corium is increased in thickness, but in a less degree; the epidermis is also proliferated, the skin changes being most marked where there are papillary growths. Both blood-vessels and lymphatics, and often the nerves, are enormously enlarged, and in advanced cases all the structures are red, the muscles undergoing fibro-fatty changes, the fascia being much thickened, and the bones enlarged, either regularly or irregularly, into exostoses.

Diagnosis.—When the disease is fully developed the enormous enlargement, the hardness with firm edema, and, if the surface is affected, the varicose lymphatics and papillary hypertrophy afford no room for error. The "elephantoid fever," in countries where it is endemic, should excite suspicion in the early stage; it differs from remittent fever in the cold and hot stages being very intense, lasting four or five days, while the intermissions vary from a fortnight to several months. In this country if a part is subjected to repeated attacks of erysipelas, more or less connective tissue hypertrophy is pretty certain to ensue.

Prognosis.—In the early stage, if the patient can be removed from the endemic district, the disease may be checked, and even in sporadic cases much may be done to check it, but there is no absolute cure, except when the disease is so situated that the overgrowth can be removed, as in elephantiasis of the genitalia.

The enormous size that may be reached has already been alluded to, but life is rarely endangered, though much burdened by the "too, too solid flesh," which may clog the patient for any period up to forty years or more.

Treatment.—During the fever of endemic cases Fayrer recommends saline aperients, with opiates to procure sleep, and locally, fomentations and soothing measures generally, followed by quinine, or, if there is much anemia, iron; change of climate is, however, of the first importance—to Europe, if the victim be a European, or, at least, away from the endemic neighborhood. The scrotal tumors may be removed by the knife; even those over one hundred pounds have been successfully re-

moved, dissecting out the penis and testicles by incisions along the course of the cords and dorsum penis, and taking away the whole of the affected skin, otherwise recurrence is likely to take place. The tumor should be drained of blood for some hours before operation, and then an elastic bandage applied, and a ligature put on at the base, as the number and size of the vessels are very great. The penis and testicles get covered in with cicatricial tissue in from two to four months. In the leg an attempt has been made to starve the growth by ligaturing the femoral artery, but has seldom been permanently successful, and no one advocates this treatment now, the more so, as compression of the main artery is fully as useful. V. Richards strongly recommends this, combined with an exclusively milk diet; but most relief can be afforded by Martin's india-rubber bandage, carefully and firmly applied during the day, and by the use of a light pervious one at night; this relieves the edema, and, except in extreme cases, reduces the limb so much as to enable the patient to get about with comparative ease; of course, this treatment is only palliative, as the limb, if left alone, speedily regains its previous size.

In the cases with warty and soft papillary growths there is often an extremely offensive discharge from the latter, due to sodden and decaying epithelium. Sprinkling the surface with iodoform, or an equivalent, such as europhen one part and boric acid three parts, corrects the fetor and, combined with pressure, assists in producing atrophy of the overgrowth; where there is a hard warty covering, salicylic acid is the best adjuvant. Various other means have been recommended; absorbent remedies, such as iodin and mercury, the latter as a Scott's dressing bandaged on, having been most highly spoken of, but the improvement is only temporary, and probably due chiefly to the rest and bandaging; indeed, the pathology of the disease suggests the futility of all such measures. When the lymphatics are very turgid, during the febrile exacerbations, opening some of them gives great relief by diminishing the tension; at the same time it is almost equivalent to bleeding the patient.

CLASS V.

ANOMALIES OF PIGMENTATION.

Pigmentation of the skin may be either excessive or deficient, and each of these anomalies may be congenital or acquired. Congenital excess is seen in pigmentary nevi, congenital deficiency in albinism.

Acquired excess is idiopathic or symptomatic, and may be either in small spots, as in lentigo, or diffuse or in large patches, as in chloasma. Acquired deficiency is seen mixed with excess in leukodermia, and as a symptomatic condition in morphea and other diseases. It is a sequel of many eruptions, of which most syphilids and lichen planus afford striking examples.

In all the above cases the excess of pigment is only an exaggeration of a normal process, and is derived from the coloring matter of the blood. Pigmentation of the skin may also be produced by matter foreign to the normal condition of the blood, such as bile, nitrate of silver, arsenic, picric acid, etc., or by coloring matter rubbed into the skin, as in tattooing, chrysarobin applications, etc.

Pathology.—We still know very little of the mode in which general pigmentation of the skin is produced. The study of Addison's disease has, however, made it highly probable that whenever the abdominal sympathetic, especially the solar plexus, is irritated, general pigmentation is likely to ensue, but how or why this is brought about is not clear. With regard to local pigmentation from irritants, or as a sequela of skin eruptions, it is a direct consequence of hyperemia, active or passive, and the exudation or extravasation of blood-coloring matter.

There are two pigments of the skin, **Melanin,** or true brownish-black, finely granular epithelial pigment; and **hemosiderin** (Neumann), a golden yellow iron containing blood pigment.

According to Ehrmann's * studies, the first stage in the em-

* "Das melanotische Pigment, und die Pigment bildenden Zellen des Menschen und der Wirbelthiere in ihrer Entwickelung nebst Bemerkun-

bryo is the production of a special cell, which he calls a melanoblast, by the separation of a cell from the mesoderm which, lying between the meso- and ecto-derm, forms pigment granules within itself. No other cell can change into a melanoblast which perpetuates itself throughout the life of the organism. It is neither an epithelial nor a connective tissue cell, forms its own pigment from hemoglobin, and carries it itself along its anastomosing processes. Melanin lying outside cells represents disintegrated melanoblasts and all other free-lying pigment hematin detritus.

As is well known the pigment is deposited in the rete mucosum, and almost exclusively in the lowest layers, but it is still a matter of dispute as to how it gets there. According to Ehrmann's older observations, chiefly on frogs, in 1884 and 1886, pigment may, however, often be seen in the upper layers of the corium as well, on its way from the vessels to the rete, where it is deposited in the deeper layers, the cells of which, at least in frogs, possess ameboid prolongations, and also in the corium there are peculiar movable cells, which send branches between the epidermal cells. It is by these protoplasmic channels that the pigment is transferred from the corium to the deeper layers of the rete, and thence to the higher layers of the rete cells.

Unna * doubts the existence of these special cells, admitting the presence of pigmented connective tissue cells. He thinks the supposed branches are simply lymph channels, and that the pigment is conveyed by them into the lymph stream, first to the spaces between the cells and then within them, the pigment being especially abundant at the distal pole of the nucleus; thus, he agrees that the pigment is derived from the blood, and is conveyed from the cutis.

Audry and others deny the presence of pigment below the

gen über Blutbildung und Haarwechsel," 1896, Th. G. Fischer & Co., Cassel, twelve colored plates.

* This process can be traced in amphibia because they possess a special layer of these pigmented, mobile connective tissue cells, and it was observed that where the epidermis was most pigmented, the connective tissue cells immediately beneath were almost pigmentless, and hence it is evident that they had transferred their pigment to the rete cells. Unna disputes the value of arguments founded on observations of frogs for the human subject.

basal layer of the rete, and Kromayer thinks the chromatophores are protoplasmic processes from epithelial cells. Audry considers that the pigment from the blood reaches the epidermis, where it is partly built up. Thence it is not reabsorbed, but transferred by wandering cells which partly pass into the lymph spaces, partly remain in interstices of connective tissue vessels, where they become fixed stellate cells. All the above observers conclude that the pigment is conveyed to and merely deposited in the basal layer of the rete, but another theory, put forward by Kaposi, and later by Post, is that it is actually secreted by it.

Few accept Jarisch's view that the pigment is formed by metabolism of epidermis cells by regressive metamorphosis, and travels to and from the corium by lymph channels.

Post's investigations led him to the following conclusions:

1. The pigment of the epidermis arises in the protoplasm of the epidermal cells in the form of minute rods.

2. Branched pigment cells are developed in the epidermis from ordinary epithelial cells, and convey pigment to the hair and feathers.

3. Where these branched cells appear in the epidermis, pigmented connective tissue cells often fail.

4. The function of the basal rete cells is to form pigment.

5. Pigment may find its way from the epidermis to the corium.

6. Pigment may occur in the corium without pigmentation of the corresponding epidermis.

7. Pigment arises as a result of a special metabolic product of the skin, according to race, local structure, and irritation in ordinary and branched epithelial cells and connective tissue cells.

The connective tissue pigmented cells regulate metabolism by dealing with superfluous pigment-forming substances. The epidermic branched cells, by their energetic pigment formation, replace the connective tissue pigment cells, and convey pigment to the horny cells of epidermal structures.

According to Post:

1. Lentigines are a normal type of hyper-pigmentation in a small area.

2. Addison's disease is a diffuse normal hyper-pigmentation.

3. Pigmentary nevi show abnormal formation of pigment in

both epidermis and connective tissue in addition to normal hyper-pigmentation of the epidermis.

Melanotic growths may lead to abnormal pigment formation in the neighboring epidermis and even in mucous membranes. He does not believe in the conveyance by special cells of pigment derived from hemoglobin.

Ehrmann explains the mechanism of vitiligo or leukoderma as follows:

While pigment is duly formed in the corium, owing to an absence of the transferring cells it cannot reach the rete, but in albinism there is a total absence of pigment-forming cells. In vitiligo the untransferred pigment in the corium is partly reabsorbed, partly transferred to the adjoining normal skin; hence the excess of pigmentation that is generally observed on the borders of the white patch. What leads to the atrophy of these pigment-transferring cells, and why in progressive leukoderma an increase of pigment precedes its disappearance, is not explained.

The pigmentation of hair is closely analogous. The pigment-forming cells are situated in the hair papilla, *i. e.*, deep in the corium; connected with these, branched cells, similar to those in the rete, are situated in the hair root, and send their prolongations between the epidermis cells of the hair, and the pigment is by their means transferred to the upper part of the hair. In addition to the pigment cells of the papillæ there are others in the matrix, and these two sets are connected by intermediate ones. Canities, or white hair, is practically leukoderma of the hair, and, as in that disease, while the pigment cells of the papilla are still present in all cases except in senile atrophy, both the transferring cells and also the pigment-forming cells of the root are absent, and hence it would appear that here also it is not the formation of pigment that is defective, but the means of transmission. According to Riehl the variations in color of the human hair are dependent not on the different amount of air in the hair, or the color of the individual hair cells, or the amount of sebum on the surface, but on the varying quantity of pigment in the horny substance of the hair.

Unna* endeavors to classify pigmentations according to whether they consist of melanin or hemosiderin. Although

* "Histopathology," with good bibliography, p. 975.

assuming more knowledge than we actually possess, the attempt is ingenious.

Melanosis includes:

a. Actinic melanosis.	Ephelis. Pinta cerulea.
β. Toxic melanosis.	Pigmentary syphilid. Addison's disease. Arsenical pigmentation. Macula cerulea from pediculus pubis.
γ. Reflex melanosis	Chloasma.

In all these the iron reaction can never be obtained.

Hemosiderosis includes:

- Post-hemorrhagic pigmentations.
- Various chronic stagnation pigmentations.
- Sarcomatous pigmentations.
- Ulcerations and scar pigmentations.

All these give the iron reaction.

LENTIGO.

Deriv.—Lens, a lentil.

Synonyms.—Freckles; Ephelids; *Fr.*, Lentigo; *Ger.*, Sommersprosse.

Definition.—Circumscribed spots or patches of pigment of small size, which occur chiefly on the face and hands.

Symptoms.—This well-known affection begins usually in the second decade of life, and consists of spots of pigment, roundish or irregular in shape, pin's head to split pea in size, and yellowish to yellowish-brown or umber, sepia black, and occasionally greenish, in color. They occur chiefly on the face, especially at the root of the nose and adjoining part of the cheeks, on the back of the hands, and less frequently on covered parts, such as the forearms and arms near the elbow, the back, buttocks, and penis.* There may be only a moderate number about the nose, or the whole face and neck may be thickly peppered with them, especially common in red-haired

* A case of a man with lentigines in all these positions attended at U.C.H for a chronic dermatitis herpetiformis; he was fair and reddish-haired. Hebra figures such a case in his Atlas, Lief viii., Plate V., affecting the buttocks and penis.

persons, and in bad cases large, dark, irregular patches are mixed up with the more numerous small kind, and the affection is then very conspicuous and disfiguring.

Sangster showed a young man to the Dermatological Society in 1893 who had extensive freckles and pigment patches of a square inch in size all over the body, buttocks, and thighs, nearly to the knees; the face was free. It began in the first or second year of life. A brother had the same, and his mother, who died of cancer, was similarly pigmented on the upper part of the chest.

A less common form is where a dozen or two discrete, deep-tinted, pea-sized spots are scattered irregularly over the face, without any of the smaller ones interspersed. Freckles generally appear first in the summer, sometimes suddenly, and are always most conspicuous at that season, while in the dark days of winter they fade away more or less, reappearing in the sunny season.

When similar spots, whether congenital or acquired, occur either on covered or uncovered parts independent of seasonal change, they are popularly called "**cold freckles,**" and some authors reserve the term "**lentigo**" for these, and give the small ones only, which are most conspicuous in summer, the title of **ephelids;** but the distinction is futile.

In a patient of mine, a young lady, æt. twenty-six, pigment spots from a millet to a hemp seed in size commenced seven years before on the thighs, and had continued to increase in numbers until there were many scores, chiefly on the thighs and front of the trunk; some months before I saw her a few appeared on the sides of the face. There were anemia and constipation, and she held a post of anxious responsibility, but there was no other traceable cause.

In a gentleman,* æt. thirty-nine, with locomotor ataxy of specific origin, there was a pigment patch on the right cheek a centimeter square, which began the size of a pin's head five years before. It had been removed four or five times by electrolysis and ethylate of sodium, and had not returned for seven or eight months until after the last removal, when it reappeared in two months. He had three other hemp-seed spots, almost black, two of them on the left foot. Possibly this is an early

*Mr. D., Private Notes, vol. G., p. 100.

case of lentigo senilis. Similar spots are sometimes seen * on the lips and oral mucous membranes. Hutchinson † has recorded the case of two girls, twins, brunettes, and quite healthy, in whom freckle-like pigment spots developed round the mouth at the age of three, and at the age of nine there was dense freckling on the lower lip, including the red part and mucous membrane, and slight pigmentation on the upper lip. Both girls had exactly the same distribution; two years later it was unaltered. Balzer ‡ had a case in which it was not only round the mouth, but on the eyelids, back of the hands, and on the forearms. It came after typhoid.

Lentiginous pigmentation is sometimes unilateral. Such a case is depicted in my Atlas,§ occupying a part of the domain of the supra-orbital nerve and second division of the fifth nerve. Robinson, Fordyce, Fox, and Bronson of New York have had similar cases, and one was published by Féré in France.‖

In a lady of forty lentigines and soft pigmented fibromata, about one-twelfth to one-eighth of an inch, developed from telangiectases. I saw one spot, half pigmented and half telangiectic.

As a symptomatic condition it may be seen as a prominent feature of atrophodermia or xerodermia pigmentosa, beginning then in the first or second year of life, while it also forms a part of another form of atrophy of the skin, that of old age, occurring then on covered parts. I have also seen it following eczema in senile persons.

Pigmented moles sometimes commence apparently as lentigo, and subsequently become prominent and assume the mole char-

* Knowsley Sibley's case, *Clinical Journal*, August 6, 1896, p. 231.

† Hutchinson's small Atlas, Plate CXLI., and *Archives*, vol. vii. (1896), p. 290.

‡ *Annales de Derm. et de Syph.*, vol. viii. (1897), p. 1106.

§ Plate LII., Fig. 2. The patient was a girl of six and a half. The pigmentation began when she was six months old, the size of a pea, and gradually increased until she was four and a half years old, and had since remained stationary.

‖ *Nouvelle Iconographie de la Salpêtrière*, vol. i., No. 3, 1888. The patient was an epileptic. Fordyce and Bronson's cases had infantile paralysis.

Robinson's was the case of a woman, æt. twenty-nine, in whom lentiginous spots not larger than a pin's point began in childhood, and developed into a patch occupying one side of the forehead only.

acter. A young girl and her brother were brought to me with lentigo because their father and aunt had numerous pigmented moles which had started as simple pigment spots.

Lentigo Senilis. Lentigo maligna, or senile freckles, has been described by Hutchinson * as occurring in old people. It commences as small irregular pigment spots, from sepia to black in color, on the eyelids or orbital region, and they coalesce into a patch or patches affecting even the palpebral conjunctiva, and on these eventually, perhaps after many years, epithelioma is very likely to supervene. He has had six cases. I have seen several such spots and patches before and two after the epithelioma period, not only about the orbit, but on the forehead and cheek; and Dubreuilh † has had four cases, in one of which sarcoma had supervened.

Etiology.—This affection is rare before eight years old, but Wilson says it is sometimes congenital, appearing soon after birth and continuing throughout life, and I have also seen ‡ cases in which this account of it was given; but this form should be classed with pigmentary nevi, and often develops into moles. The ordinary variety often disappears as old age approaches. Both sexes are equally liable to it, but it is much more common in those of fair complexion, and red-haired people are seldom free. At the same time freckles may be seen in dark-complexioned individuals, and even in mulattoes.

The chief exciting cause, by almost universal consent, is sunlight, direct or diffuse; hence their prevalence in summer, perhaps because pigment activity generally is greatest in strong sunlight.

Hebra rejects the sun theory, because they may occur in covered parts, but probably there are other causes also, which we are unable to trace, and it may not be essential that the sun's rays fall directly on the affected region. Defective nutrition is a cause of symptomatic lentigo, and it is seen in association with anemia, constipation, and lesions of the abdominal viscera.

* Hutchinson's *Archives*, vol. v. (1894), p. 257, Plate CVI., and in smaller Atlas.

† Dubreuilh, *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1092.

‡ Miss H., Private Notes, vol. ii. p. 264.

Pathology.—Lentigo differs from other pigmentation only in being situated in a circumscribed portion of the rete.

Anatomy.—Moritz Cohn* of Hamburg has investigated the anatomy of ephelids, lentigines, and nævi pigmentosi, and finds that in ephelids the cutis and vessels are normal, the only change being the presence of pigment in the basal layer of the epidermis, while in lentigines and nevi the pigment is always in all the layers of the epidermis and in the cutis, down to the subpapillary layer, and that the vessels of the cutis are always hyperplastic and the endothelial nuclei swollen.

It is evident that he uses the term lentigines for those congenital pigment spots which I have already pointed out are really pigmentary nevi.

Treatment.—This will be given under Chloasma.

CHLOASMA.

Deriv.—$\chi\lambda o\alpha\zeta\omega$, to be pale green.

Definition.—Chloasma is a generic term for both the irregularly shaped and sized patches of yellowish, brownish, or blackish pigmentation which occur chiefly upon the face, and for the more diffuse discolorations which may occur anywhere or everywhere upon the body.

Symptoms.—The only change in the skin is in the color of it. When in patches their borders are fairly well defined. Though oftentimes round or oval, they are infinitely varied in size and shape, and while the tint is most commonly fawn-colored, yellowish-brown, or brown, it may deepen into bronze or black **(melanodermia).**

In the diffuse form the borders generally merge imperceptibly into the normal skin, and although the pigmentation may be very extensive, even to universality, certain parts of the body, chiefly those that are normally pigmented, are generally deeper in tint than the rest, viz., the axillæ, nipples, umbilicus, pubes, and genitalia.

Etiology.—The idiopathic form is generally the consequence of some external irritation, and is generally localized to the part irritated. It may, however, arise without apparent cause. The principal causes are:

Counter-Irritants, such as sinapisms,† vesicants, etc., which

* *Monatsh. f. p. Derm.*, vol. xii. (1819), p. 119, illustrated.

† Dubreuilh published a case which extended beyond the site of the sinapism, and went all around the body.—*Ann. de Derm. et de Syph.*, vol. ii. (1891) p. 76.

may be followed by pigmentation, generally of a brownish hue, on their site of application. I have also seen deep pigmentation follow an abrasion, a phenomenon of the same class, while the heat of the sun produces the well-known sunburn, and artificial heat discoloration of the part exposed, sometimes in rings (see Erythema ab igne), as may be seen on the legs of stokers or others subjected to similar influences. Friction, pressure, or scratching, if long continued, also produces pigmentation, which may be both extensive and permanent. This is seen in its highest degree in severely itching diseases, like prurigo and phthiriasis, as in tramps * and aged people, constituting the **pityriasis nigra** of Willan. In two cases recorded by Thibierge, and in another by Chatin, the oral mucous membrane was also stained. A case † of permanent pigmentation in a young man, following exposure to great cold in Sweden, came under my notice some years ago. (See Keratosis nigricans.) Lees showed a child, æt. eleven, at the Dermatological Society, in whom, when six months old, small red spots appeared, and left pigmented areas, which increased in size, the longest being two inches by one; they were still increasing in number and size, and were scattered over the neck, trunk, and limbs. Gautier ‡ records a case of a boy of six in whom pigmented patches from sepia to almost black began to form at the age of two years, and were distributed all over the body; precocious maturity of the genital organs preceded and accompanied the pigmentation, but the hair of the head was ill-developed.

In a case shown by Bunch to the Dermatological Society a youth of eighteen, six weeks after a fall on his left side, noticed

* Greenhow published cases of this under the name of "Vagabond's Disease simulating Morbus Addisonii," in *Clin. Soc. Trans.*, vol. ix. Hebra's Atlas, Lief 5, Plate VIII., shows sepia pigmentation; while in Alibert's Quarto Edition of 1832 there is a Plate at p. 526, where the skin was quite black where pediculi were most numerous. The history is at p. 746. Audry has examined the skin histologically; he found abundant pigment in the cylindrical layer of the rete, and also uniformly spread in small quantity throughout the rete. There was chronic inflammation in the corium and pigment in blocks and grains in various parts of it.—*Jour. Mal. Cutanées*, vol. xiii. (1901), p. 213.

† *Clin. Soc. Trans.*, vol. xiv. p. 152. A somewhat similar case, also following exposure to cold, is recorded by Carrington in the same volume.

‡ Abs. *Ann. de Derm. et de Syph.*, vol. i., 1890.

a small patch of pigmentation over the site of injury. It grew for two and a half years, and when seen three years after the accident it was 3 1-2 by 2 1-2 inches and of a brown color.

Symptomatic Chloasma may be a sequel or concomitant of various skin eruptions, may be consequent on, or sympathetic with, physiological or pathological conditions of the uterus, or due to cachexia.

As a sequel to various lesions of the skin, independent of pruritus, it follows syphilids, varying from fawn to dark brown, and often of long duration; lichen planus, in which it is very deep, almost black sometimes, and also lasting long; after urticaria in exceptional cases; after erythema marginatum and other forms of erythema exudativum, where it is often marked, but not, as a rule, very persistent, and after repeated exposure to the Röntgen rays.

As a concomitant symptom, it may be seen in senile atrophy of the skin, in which it is diffuse; in urticaria pigmentosa; in sclerodermia, both diffuse and circumscribed, in which it is generally in streaks or patches; in fibroma, in which it is in large blotches on the trunk, but on the face it may be diffuse; in the pigmentary syphilid, where it is limited to the neck and associated with leukodermia; and in rare instances with psoriasis and pityriasis rubra. Below the knee pigmentation is easily produced by slight causes, especially when there are varicose veins.

After a slight injury or inflammation blood-coloring matter is effused into the tissues, either by transudation or by capillary extravasation. This is seen in its most extreme form where eczema has supervened on bad varicose veins, leaving the tissues round the ankle infiltrated and almost black. In a very few cases pigmentation on the face and chest resembling tinea versicolor has been observed where the demodex folliculorum has been very abundant (see Demodex).

The **orange and café-au-lait** patches so often seen in the lower part of the legs are due to capillary rupture, doubtless consequent on an antecedent lesion, morbid or traumatic, though it is often so trivial as to escape notice. Perhaps a similar explanation accounts for the rare cases in which appar-

ently causeless patches of pigment have appeared on the front of the legs, often quite symmetrically. McMurray of Sydney sent me photographs of such a case in a boy of ten; they had been present two years. Hutchinson * records a similar case in a boy of thirteen; they faded in about four years from the onset. Two cases have been shown at the Dermatological Society of London by S. Mackenzie and Perry, also in a boy, which suggested that the condition was of similar origin to café-au-lait patches.

Chloasma Uterinum may be a physiological or sympathetic pigmentary disturbance. It is seen on the linea alba, the nipples, cheeks, and forehead, of pregnant women until after parturition, and occurs in others also, who suffer from uterine irritation. The color is a dirty yellow or brownish tint, defined or shading into the surrounding skin. Its most common and characteristic position is on the forehead, where it forms a continuous or interrupted patch, with irregular borders, between the hair and eyebrows, expanding at the temples, but it may be almost all over the face, and in rare instances on the trunk and limbs. It may occur at any time from puberty to the climacteric, but in single women is rare before thirty. A singular variety is recorded by Swayne in a woman, in whom during the last three months of three successive pregnancies the face, arms, hands, and legs were spotted like a leopard, and remained so until after her confinement. In a lady,† æt. thirty, sent to me by Dr. Saltzmann, the color became deeper with each successive pregnancy, until the whole face, neck, and bend of the elbow were bronzed as if she had been exposed to a tropical sun, while there were patches of a darker, almost black hue on the forehead, temples, and round the mouth. In a woman, æt. forty-five, under my colleague, Sir John Williams, for ovarian tumor, four pigment spots, from one-third to three-quarters of an inch across, developed slowly and symmetrically just above the umbilicus. Kaposi ‡ knew a lady with a pigmented mole two inches square on the side of the neck, which became

* *Archives*, vol. iv. (1893). S. Mackenzie, *Brit. Jour. Derm.*, vol. x. (1898), p. 416. Perry, *loc. cit.*, vol. xiii. (1901), p. 54. This case had punctiform telangiectases like Schomberg's spreading case in the same volume, p. 1.

† Mrs. H., vol. C , p. 27.

‡ *Loc. cit.*, Berlin International Congress.

quite black at each pregnancy, and was the first recognizable sign of her condition. Boxall had a case in which the cicatrix of an ovariotomy done during pregnancy became pigmented a few weeks after the operation.

A similar pigmentation may be occasionally met with in disorders of other abdominal viscera. Thus, in abdominal tuberculosis, Guéneau de Mussy has noted a pigmentation of the face like that of chloasma uterinum; sometimes, in addition to the nose and cheeks, the backs of the hands and even other parts may be discolored almost like Addison's disease. He has also seen it in four cases of cirrhosis with ascites, and in one of cancer of the stomach. I have also seen it in a lady who suffered from extreme chronic constipation, but with no uterine symptoms. Cases occur sometimes in quite young persons in which the cause is untraceable. In a healthy married woman of thirty-three a pigment spot first appeared on the upper lip and spread over the inner side of the cheeks, orbits, and forehead, like the usual chloasma uterinum.

In Graves'* disease, pigmentation, either frecklelike or patchy, is not uncommon about the orbits and in those parts of the body where there is normally some pigment; it may be universal or in the form of leuko- and melano-dermia (see also p. 67).

Bronze Diabetes. In 1882 Hanriot and Chauffard† were the first to describe general bronzing of the skin in association with diabetes mellitus and hypertrophic cirrhosis of the liver, which they called bronze diabetes. Osler‡ and others have shown since that the diabetes is a late epiphenomenon, and that the disease is a hemo-chromatosis, characterized by accumulation of an iron-containing and an iron-free pigment, which set up a chronic interstitial inflammation of the liver and pancreas, and when a certain grade of inflammation of the pancreas is reached

* A case is figured by Drummond like leuko- and melano-dermia in *Brit. Med. Jour.*, May 16, 1887. See also H. W. G. Mackenzie in *Lancet*, September 13, 1890, pp. 5–46, with many references.

† A later paper, by Hanriot alone, gives a *résumé* to date, and discusses the different views as to the pathogeny, *Brit. Med Jour.*, January 25, 1896, p. 206.

‡ *Brit. Med. Jour.*, December 9, 1899. Hypertrophic cirrhosis of liver with bronzing.

diabetes ensues, and is the beginning of the end. It is a special disease, and of thirty known cases all have been males.

Blue or slate-colored pigmentation, indistinguishable from argyria in tint, may also be observed in the same connection of pigmentary cirrhosis of the liver and pancreas. In a case recorded by Dr. Maude Abbott,* the patient was a woman known in the hospital as "Blue Mary," from her slaty color, deepest on the exposed parts, face, neck, and hands, but it was general to some degree. At her death the liver and kidneys were found as described, but very little pigmentation could be seen in the skin. A slate-colored case without any history of the ingestion of nitrate of silver was shown at the Dermatological Society some time ago, by Mitchell Bruce,† and I am now inclined to think that the case represented on Plate XXXVIII. of my Atlas as "Argyria" may also belong to this class. In both Bruce's and my case the men showed no evidence of visceral disease. Both had had syphilis. Neither had glycosuria.

Spender draws attention to the frequency of pigment patches in association with rheumatoid arthritis; sometimes it is lentiginous, in others, in large patches.

Discoloration of the skin is common in many cachectic states. Thus in secondary syphilis there is a very characteristic earthy hue of the face. In nodular leprosy of Europeans, besides various discolored patches on the body, there is a general bronzing or livid brown tint late in the disease, and a fawn or yellow color in the early stage. In Addison's disease there is the well-known general bronzing of the skin, extending to the mucous membranes. In cancer there is a sallow lemon tint. In the case of a man suffering from multiple melanotic sarcomata, Wickham Legge‡ observed nitrate of silverlike pigmentation on the face, neck, and hands, but very little elsewhere. In malaria the skin may be of a yellowish or chestnut brown to black color, chiefly after long exposure to its influence, but it occurs in an extreme and acute development in the pernicious forms, as in the "Black disease" of the Garo Hills in Assam.§

* M. Abbott, *Jour. Path. and Bacteriology*, vol. vii. (1900), p. 55; abs. *Brit. Jour. Derm.*, vol. xiii. (1900), p. 63.

† Mitchell Bruce, Internat. Atlas of Rare Diseases, Plate XVII.

‡ *Path. Soc. Trans.*, vol. xxxv. (1884), p. 367, with colored plate.

§ Dr. Clark in *Indian Medical Gazette*, and full abstract in *Brit. Med. Jour.*, November 29, 1884.

Diagnosis.—The diagnosis can seldom offer any difficulty, except as regards the cause of the discoloration, and this can be identified by a knowledge of its etiology in general and the modifications produced under various circumstances. In a few cases pigmentation on the skin may simulate pigmentation in it, as is seen in that produced by various pigments by hysterical women and malingerers. These can always be washed off with a weak solution of chlorinated lime, if not with soap and water.

The discoloration of chromidrosis can also be washed off with spirit of chloroform or ether.

Various fungi may flourish and produce discoloration on the skin, such as that of *tinea versicolor*, *erythrasma*, and the Mexican disease *carate* or *mal del Pinto*. On scraping off some of the skin and placing it under the microscope, as directed under parasitic diseases, the spores or mycelium can be readily detected in these forms.

Prognosis.—This depends, as a rule, on whether the cause is still in activity, and upon the length of time it has been in operation. Otherwise transitory pigmentations may become permanent if the cause be frequently repeated, as in some cases of chloasma uterinum.

Pigmentations that are sequelæ or concomitants of eruptions and those due to irritation generally fade gradually away, except when on the lower part of the leg, and varicose veins are present.

Treatment.—Careful investigation into the cause must be made, and when this is removable by appropriate measures, the pigmentation will in many cases slowly disappear. It is chiefly for pigmentation on the face or other exposed part that advice is sought, especially for lentigines and chloasma uterinum. Assuming the cause to have been obviated, local applications may be of service, and these are chiefly such as remove the epidermis more or less completely.

Unfortunately the relief is too often only temporary, the pigmentation gradually returning. Corrosive sublimate in from half to five grains to the ounce of almond emulsion, dabbed on several times a day, is one of the best applications, the strength being adapted to the sensitiveness of the patient's skin, and two grains is the maximum that should be used until that is ascertained. Hebra recommends a one per cent. solution of hydrarg.

perchlorid. to be applied on lint cut to the exact size of the discoloration, and kept constantly wet with the solution for three or four hours (care must be taken to apply blotting paper to the edges of the lint, as the solution is apt to get dangerously concentrated there), vesication ensues, the raised epidermis is cut away, and the raw surface beneath dusted with starch powder. The remedy is severe and not always permanently successful. Other formulæ of this kind are given in the Appendix (Lotions, F. 11, 12, 13).

Citric acid solution ℥ss, to ℥j, has been successful; acetic acid and sulphur made into a paste is suggested by Neumann.

Pure carbolic acid applied carefully with a match, tincture of iodin, nitrate of zinc paste, nitrate of mercury ointment diluted one to two, nitrate of zinc ointment, veratria ten or twenty grains to the ounce of lard, and a host of others have had advocates, and testify rather to the unsatisfactory results of treatment than to their success; carbolic acid is one of the best; it turns the skin white and it exfoliates in a few days.

Salicylic acid is worth trying, applied in the form of paste or of Unna's plaster for twenty-four hours, or as a saturated solution in alcohol applied continuously and kept constantly wet for several hours. Desquamation may thus be obtained without going too far, as may happen without great care with strong solutions of corrosive sublimate and the like.

Piffard used peroxid of hydrogen to a melsamic patch, and partially removed it, but whether temporarily or permanently he did not know. Leloir * obtained permanent success with the following treatment: The part was first thoroughly cleansed with soft soap and alcohol, then painted with several layers of a fifteen per cent. solution of chrysarobin in chloroform, and this was then covered with a layer of traumaticin, the applications being removed when they began to peel off. He not only claims to have cured many forms of chloasma, but even flat or slightly rugose pigmentary nevi. Hitherto, however, it has not been successful in my hands, and in one case the patient thought the discoloration was deepened.

Brocq recommends that the emplastrum Vigo or emplastrum rubrum of Vidal should be applied overnight, and perchlorid

* "Traitement des Mélandermies," *Jour. des Connaissances Médicales*, July 1, 1886; abs. *Ann. de Derm. et de Syph.*, vol. vii., p. 561.

of mercury (a grain to the ounce or more) applied as a lotion twice a day.

Hardaway uses superficial electrolysis for ephelids, the needle not being introduced deeper than the epidermis. It is well adapted and quite manageable for a few lentiginous spots, and I have had excellent results with this plan.

Hardy says that the sulphur waters of Barèges and Luchon, in the form of douches, are very effectual sometimes for large chloasmic patches. Harrogate and Strathpeffer waters would act in the same way.

Discoloration from matter foreign to the blood may here be described.

Jaundice, produced by the circulation of bile in the blood, produces various tints of yellow up to olive green or even bronze. Dr. Seymour Taylor showed a case at the Ophthalmological Society in April, 1886, in which the lower lid on the right side was permanently, while that on the left side had been temporarily stained of a dark green color, in a patient who had had jaundice eighteen years previously.

In a case of Cavafy's * leukodermia, preceded by dark general pigmentation, followed an attack of jaundice in a man æt. twenty-nine.

The connection of jaundice and xanthoma will be reverted to under the latter disease.

With respect to drugs, the most important discoloration is that produced by *Nitrate of Silver*. This discoloration of the skin is known as **argyria** and was much more frequent before silver nitrate was displaced by bromids in the treatment of epilepsy. Moritz states that the reduced metal is deposited chiefly in the rete, sweat glands, and round the hair-roots, while the sebaceous glands escape; in fact, in almost the same position as ordinary pigmentation. Riemer and Neumann state that it is found in all parts of the skin, except the lining cells of the glands and the cells of the rete, the deposit being greatest immediately beneath that layer. It only occurs after very prolonged administration. Krahmer says the smallest quantity that has induced it is 450 grains, and in Riemer's case 1740 grains had been taken during twelve months before the first

* *Path. Trans.*, vol. xxxii. (1881), p. 259.

traces of argyria appeared. It has also been excited by the topical application of the silver salt solution to the throat, continued for a long time. I have met with a case* in which the blueness did not develop for many years after the topical applications had ceased to be made.

Unfortunately, when once it has shown itself, nothing can stop its further development. It is of various bluish-gray, slate, leaden, bronze, bluish, or blackish shades of color. It is general in distribution, including the visible mucous membranes, but more marked on the parts most exposed to light, such as the face and hands. For treatment iodid of potassium has been recommended, but it has little, if any, effect, as a rule; Duhring quotes Yandell to the effect that in two syphilitic patients, by the prolonged administration of large doses of the iodid for several months, combined with mercurial vapor baths, the decolorization was slowly effected.

Arsenic may also produce a brownish or bronzy pigmentation; it has been described along with the eruptions produced by the drug. The color gradually fades when it is given up, unless the administration has been very long, when I have known it last for many years. (See *Arsenic* under Drug Eruptions, p. 474).

The slate-colored or brownish pigmentation left on the site of psoriasis patches, when arsenic has been given, has already been described under psoriasis.

Picric acid, in large doses, produces a yellowish color of the conjunctiva, of the skin, and of the urine.

Tattooing.—After the pattern has been pricked out with needles, various coloring matters are rubbed in. Generally gunpowder, vermilion, indigo, or carbon is employed. Hebra † figures a remarkable instance where the whole body was elaborately patterned. W. Anderson showed another such instance of Burmese tattooing at the Dermatological Society in 1892, and there was another case of a woman in Barnum's show. When small and in a disfiguring position, and the removal is desired, excision is the only plan, the particles being too deep

* Author's Atlas, Plate XXXVIII., Fig. 1. This plate represents the color of argyria, but as the history of the case shows, he had not had any of the salt for thirty years, and, as stated on page 615, it was probably a case of pigmentation from fibrosis of the liver and pancreas.

† Atlas, Lieferung viii., Tafel x.

for any less radical measures. Ohmann Desmesnil says that by retattooing with glycerole of papoid the tissue round the particles is dissolved, and the freed particles may be absorbed by the lymphatics or thrown off by the epidermis. This requires confirmation. Grains of gunpowder blown into the skin are also best treated by excisions carefully planned, so as to include as many grains in one cut as possible: if done antiseptically, union by first intention may be obtained. I had a most successful case of this kind; a year after the operation no trace of the incisions could be seen.

These tattoo marks are sometimes the starting-point of cutaneous lesions. Thus Fox * of New York describes and figures a tattoo mark of an anchor on the lines of which twenty warts had developed. Syphilis and septicemia have been implanted by ignorant or careless operators.

ALBINISM.

Deriv.—Albus, white.

Synonyms.—Albinismus; Congenital leukodermia; Congenital leukasmus; Congenital leukopathia; Congenital achromia.

Symptoms.—Albinism is the congenital absence of pigment in the tissues, and may be either universal or partial. Albinos, as people with universal albinism are called, are characterized by a total absence of coloring matter in the skin, hair, iris, and choroid. Their skin is either perfectly white, or pinkish in the thinner parts where the blood-vessels are partially visible. The hair is fine and soft, with a silky luster, is either perfectly white or of a whitish-yellow tint, as a rule, but in a case recorded by Folker † it was red. The pupil appears red, and the iris pink, owing to the absence of pigment in it and the choroid, allowing the color of the vessels to show through; and as the retina has no protection against excess of light, photophobia is always present, and the irides, eyeballs, and lids are in a constant state of movement. Sometimes, when viewed obliquely, the iris has a pale blue tint, the result of interference of light, and B. Squire

* *Amer. Jour. Cut. and Gen.-Urin. Dis.,* vol. ii. p. 216.

† *Lancet,* May 31, 1879.

has recorded a case where the irides were dark blue, and consequently there was no photophobia.

As a rule, albinos are weakly both in body and mind, of short stature, with a proneness to chest disease, but there are many exceptions, a notable one being a late well-known English statesman.

Animals and birds are also subject to albinism, *e. g.*, ferrets, blackbirds, etc.

Partial albinism is much more frequent, and of course more noticeable in colored races, but is also to be seen in white people. The absence of pigment occurs in irregularly outlined, isolated patches of various sizes, the borders of which may be well or ill defined, according to whether the adjoining skin is normally or slightly under-pigmented, but it is never more strongly pigmented. They are the antitheses of the flat pigmented moles, and, like them, may have a nerve distribution,* but are rarely, if ever, symmetrical. Any hairs on the affected areas are also white.

Etiology.—Heredity is the only known cause of the complete form, and this in the shape of family prevalence, as where there are several children in a family more than one are almost sure to be albinos, and Lesser knew of a family where six out of seven were so. In some tropical countries, such as Loango, Lower Guinea, it is said to be endemic. On the other hand, it is exceptional for the parents to be affected; but in a case mentioned by Schlegel † the grandfather was an albino, and Marey ‡ describes the Cape May albinos, in which the mother and father "were fair emblems of the African race," and of their children three were black and three white, born in the following order: two consecutive black boys, two consecutive white girls, one black girl, one white boy.

At a medical meeting in the Leeward Islands in 1892, A. P. Boon showed two albino negroes, and the father related that his uncle's wife always bore twins, one of which was white and

* In Hutchinson's Smaller Atlas Plates I. and II. show a remarkable case in a Hindoo with hemiplegic distribution like some cases of ichthyosis hystrix, in streaks also. In Ziemssen's "Handbook of Skin Diseases," p. 447, a case is figured with a white patch on the abdomen.

† "Ein Beitrag zur näheren Kenntnis der Albinos" (Meiningen, 1824), quoted in Ziemssen.

‡ *Amer. Jour. of Med. Sci.*, 1839, quoted in Duhring.

the other black; and another member related that he knew a black man who suddenly became quite white.

Sym * of Edinburgh related the history of a family of seven children who were alternately albino and dark. All but the seventh were living and in good health, and without mental defect. The parents and other relatives were dark.

LEUKODERMIA.

Deriv.—λευκός, white; and δέρμα, the skin.

Synonyms.—Vitiligo; Acquired leukasmus; Leukopathia or Achromia; Piebald-skin.

Definition.—An acquired disease characterized by the presence of symmetrical and progressive white patches with convex borders surrounded by increased pigmentation.

This is a common disease in tropical countries, but rare in Europe. Thus Garden met with 1 in 36 cases in India, Kaposi placed it at 1 in 500 in Vienna, Erasmus Wilson 1 in 400 in private practice in London, MacCall Anderson 1 in 2500, and my own figures give 1.5 for hospital and 2 per 1000 for private practice.

Symptoms.—The affection is entirely one of pigment distribution. In many, and I believe in all, though it is denied by some authors, there is an increased deposition of pigment preceding the white patches. These appear as round or oval, occasionally irregular spots in the darker area, which slowly enlarge, driving the pigment before them, as it were; the part immediately beyond the white area, containing more or less excess of pigment, which is generally of a light brown hue, and offers a sharp contrast to the milk-white area within. The white patches, either from unequal spreading or from coalescence, lose their roundish shape, but the borders are always convex and, as a rule, well defined, but occasionally shade off gradually. The darker color diminishes from the white area outwards, and always merges imperceptibly into the normal skin.

The penis is often more deeply pigmented than other parts.

* At the Ophthalmological Society of London, reported in the *Lancet* July 11, 1891.

In a few cases the pigmentation is very dark. In one of mine, a butler who had severe jaundice some years before the leukodermia, and some kind of liver disorder immediately preceding it, there was a blaze of white down the center of the face, while the sides were as dark as the skin of a negro.

The patches may be few or numerous, affect any or all regions of the body successively, including the scalp; the hair also nearly always turns white in the affected areas, which contrast with the pigmented parts and give the surface a maplike appearance. The disease takes many years to travel all over the body, and there are generally a few pigmented patches left. Thus in a girl in whom the disease began when she was nine, and was very extensive when I first saw her at ten, the white gradually extended at the expense of the pigment until, at the age of thirty, it was reduced to a few pigmented spots at the elbows. A negro,* in whom it began at fifteen, was quite white at sixty, except some pigment spots on the cheeks, ears, and forehead.

In a white person, when it has spread over a whole region, the disease may seem to have undergone a spontaneous cure, owing to the absence of contrast, but the normal pigment is very rarely, if ever, restored. The progress is not always regular, and may be arrested for a time.

It is more conspicuous in summer, probably owing to the pigmented part being deeper-colored then, and sometimes this excess permanently disappears, and effects an improvement in appearance by diminishing the contrast between the light and dark part. This progressive form is always fairly symmetrical, often strikingly so, but strictly unilateral cases have been observed, as in the case of a negro shown by Hitchins at Hutchinson's clinic.

There is no alteration in sensation or secretion, nor is there any subjective symptom, though pruritus has occasionally preceded the appearance of the spots.

The thyroid gland has in some cases been enlarged, as in goiter and Graves' disease, while in other cases it appears to be deficient, but never to the extent of myxedema, and I have never heard of its being associated with that disease. In two cases

*Magruder and Stiles, *Medical Record*, March 10, 1894, p. 294, illustrated.

reported by Neisser and Rille * respectively, red pin's-head papules appeared on the white patches.

Etiology.—Both sexes are equally liable, but it is rare before ten or after thirty. The youngest case that I have met with was a girl four years old. The oldest date of onset was in a gentleman, æt. thirty-nine, who had lived in Mauritius all his life, and his wife also had two small white spots on the same side of the neck, which appeared after coming to England. In another case it commenced at forty-two. It may also be hereditary; a former student of University College Hospital informed me that it existed in his sister, mother, and grandmother.

The disease is certainly more common in the dark races; exposure to the sun is thought to be an exciting influence, and in one of my cases it supervened after sunstroke; extreme cold seems also capable of producing it, and in a case under J. Startin, Jr., it came on in Canada after suffering severely from the cold. In my experience it is more common in neurotic subjects, and Lebrun thinks it is always a ground for inquiring closely for other neuroses. It has developed after violent mental emotion and after a toxic neuritis (Emery), and after tuberculin injections (Du Castel). I have seen associated with it migraine and retinitis pigmentosa, the patient stating that the leukodermia had commenced with defective sight nine years previously. In association with other skin affections it has been seen in connection with morphea, alopecia areata,† with the latter disease fairly often; also with Addison's disease,‡ and Graves' disease, all of them considered to be diseases with a neurotic element in them. Not only achromic patches, but true

* *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1382, a report of Vienna Derm. Soc., and reference to Neisser's case.

† According to Thibierge, the alopecia associated with leukoderma is not the same as alopecia areata, and is persistent. While agreeing with the former statement, I do not with the latter, as I have seen the hair grow again repeatedly. In my Atlas case the hair fell off completely after a fright, and the leukoderma developed seven months later. The hair grew again, after some years of treatment, almost all over the scalp.

‡ *Vide* interesting correspondence between Wilks and Gairdner, in which Wilks disputes leukodermia occurring in Addison's disease. *Lancet*, July 28, and August 4, 1900, pp. 246 and 349. Also a case of the combination February 17, 1900, p. 453. Also *Brit. Jour. Derm.*, vol. xiii. (1901), p. 39.

leukodermia may occur after psoriasis, as I have seen in one case of my own. Depressing influences, especially severe illness, such as ague, intermittent fever, scarlatina, and typhoid, have preceded the disease in many instances. It has also been observed after hysterectomy. Cavafy's case following jaundice has already been mentioned. Localized leukodermia has followed compression by an inguinal truss (Hallopeau).

Pathology.—There are strong grounds for regarding the disease as due to an angio- or tropho-neurosis, but how this produces it, and why, is not clear. The anatomy of the process has been explained under the pathology of pigmentation in general. S. Marc finds that there are thinning of the rete and other signs of atrophy of the skin and a complete absence of chromatophores.

Diagnosis.—This will seldom give much difficulty. Its symmetry, progressiveness, and the combination of excess and deficiency, are characteristic features; in all these points it differs from the congenital white patches which are sometimes to be observed, and called partial albinism.

In India the disease is sometimes mistaken for *maculo-anesthetic*, or *nerve-leprosy*, and indeed it is sometimes called "white leprosy"; it has, however, nothing in common with true lepra, and the pale patches on the skin of the late stage of nerve-leprosy may always be distinguished by the more or less pronounced anesthesia in the affected areas, while the sensibility is never affected in leukodermia.* When the white areas have spread over a large part of the body, driving the pigment, so to speak, into small islands, the pigmentation becomes the most striking feature, and the affection may be mistaken for *chloasma;* the concave border of the pigmented area should suggest leukodermia, and more attentive observation will then reveal the abnormal whiteness of the surrounding skin, and the history will clear up any remaining doubt.

The whiteness often seen in *morphea* may be distinguished by its being accompanied by a change in the texture of the skin, which is often parchmentlike, though it may be atrophic, and by the other signs of that disease.

* Barbe relates a case of vitiligo and hysteria following Battey's operation in which there was anesthesia in the white areas, but this was probably due to the hysteria rather than to the leukodermia.

Prognosis.—It will be gathered from the above description that the disease is not a very hopeful one, though spontaneous arrest may occur. In course of time improvement may take place, either through the excess of pigmentation fading, or by a whole area becoming white, and so the contrast is lost; this is the probable explanation of reported cures.* A case is reported by Stelwagon of Philadelphia, in which the whole body surface thus became white, and exposure to the sun had no effect on it.

Treatment.—This is highly unsatisfactory; nothing appears to have any controlling influence. Duhring recommends arsenic, but apparently on theoretical grounds; perhaps, if given long enough or in large enough doses, arsenical pigmentation might ensue, which would, at all events, be a better match than that proposed by Brito, who suggested that argyria should be produced.

General tonics are also recommended, and an effort should be made to put the general health of the patient in as vigorous a condition as possible; in this way we may hope to arrest the disease, though we can hardly hope to restore the lost pigment. In consequence of the defective thyroid noticed in some cases I have tried thyroid extract internally, but was unable to see any effect, though it was given for some months. Noücke, however, in his own case, which began when he was five years old, found that at one point the pigment was spontaneously restored, while the rest remained unaffected.

Ehrmann relates a case where small pigment spots appeared after a time in the leukodermic patches; these Kaposi suggests might have been unperceived lentigines, which the contrasting whiteness of the disease revealed, but this explanation will not hold if leukodermia is produced by the cessation of the pigment supply.

Local treatment is directed towards diminishing the contrast between the light and dark parts. The excess may be attacked in the same way as is recommended in chloasma, while the white part may, where it is worth while, as on the face, be slightly stained with walnut juice or other pigment.

* *E. g.*, Balmanno Squire's case, *Brit. Med. Jour.*, April, 1881.

CLASS VI.

ATROPHIÆ—ATROPHIES.

ATROPHIA CUTIS, OR ATROPHODERMIA.

TRUE atrophy of the skin may be quantitative or qualitative, *i. e.*, there may be simply diminution in the number and size of its component elements, or an alteration of a degenerative character of those elements.

Degenerative Atrophy.—Information is still wanted with regard to the anatomical distinctions of different qualitative atrophies, but there is not necessarily diminution of bulk, and there may be actual increase, as in the later stage of morphea, where there is thickening from increased connective tissue; but at the same time the skin is hardened, yellowish, or whitish and waxy-looking, loses its natural lines, and is sometimes puckered at the borders; in their earliest stage the small white spots are examples of the quantitative form.

Quantitative Atrophics.—In this condition, speaking generally, the skin is thin, usually very white, but sometimes pigmented, finely wrinkled, and dry; or, when there is contraction of the part below, as in the last stage of sclerodermia, stretched, smooth, and shining.

This atrophy may be idiopathic or symptomatic, and each of these may be diffuse or circumscribed, and these again may be further subdivided. As the terms speak for themselves, all these atrophies may be placed in a tabular form, which will show their relations to each other without further explanation.

ATROPHODERMIA PROPRIA.

- Atrophodermia Idiopathica
  - Diffusa
    - Progressive, or in large patches
      - Juvenilis (Xerodermia)
        - Pigmentosa
        - Albida.
      - Congenitalis
        - Quantitativa.
        - Qualitativa.
      - Senilis
    - Circumscripta (Striæ et Maculæ)
      - Traumatica.
      - Non-traumatica.

ATROPHODERMIA PROPRIA (*continued*).

- Atrophodermia Symptomatica
  - Neuritica (Glossy skin)
    - Traumatica.
    - Non-traumatica.
  - Morborum cutis
    - Sclerodermia.
    - Seborrhea.
    - Lupus.
    - Syphilis.
    - Favus, etc.

The symptomatic atrophies due to other skin diseases are described under their primary disease; the others only will be given here.

Two diseases of trophic origin, though not atrophies, are included in this section, viz., perforating ulcer and ainhum.

XERODERMIA PIGMENTOSA.*

Synonyms.—Atrophodermia pigmentosa (Crocker); Angioma pigmentosum atrophicum (Taylor); Dermatosis Kaposi (Vidal); Liodermia essentialis cum melanosi et telangiectasia (Neisser); Melanosis lenticularis progressiva (Pick).

This disease is a very rare one, but owing to its striking peculiarities it is easily recognized, and there are over a hundred cases on record, though the disease has only been known since Kaposi † first described it in 1870. The first three cases known in England came under my care in 1883,‡ and two of them are

* In the first edition of this work I suggested atrophodermia instead of xerodermia as more appropriate and less liable to lead to confusion with mild ichthyosis; but although everyone disliked Kaposi's designation, it is in a fair way to be generally adopted, and dermatology suffers too much from overchristening for me to hold out.

† Hebra, vol. iii. p. 252. Kaposi's Hand Atlas, Plates 367 to 376, form an interesting series. Plates 374 and 375 are noteworthy as they show an early stage on the face and hand. Author's Atlas, Plates LVI. and LXXV., show the disease in its full development and distribution, and are the portraits of the two girls in one family above referred to; the third case, a boy, died in 1895. St. Louis Atlas, Plate XLVII., a case of Du Castel, formerly under Tenneson, is interesting, as it shows epitheliomatous ulceration of the nostrils and lip in a child, while there were only a few freckles and slight atrophy of the skin to represent the other symptoms. Morrow's Atlas, Plate LXV., produces the well-known case in Vidal's valuable monograph.

‡ Recorded in *Med. Chir. Trans.* for 1884, with colored plates and table of thirty-four cases. Since then cases have been published in England,

still alive. The eldest presented all the features in a marked degree. A fourth case, a girl, æt. ten years, of a mild type, came to me in 1897, and a fifth in 1901,* a girl of eight years, who, although the usual symptoms were only moderately pronounced, had an epitheliomatous † fungating growth between the brows of six weeks' duration.

Symptoms.—There are six kinds of lesions present in the great majority of cases. *Lentigines,* or frecklelike pigmentation, is the most striking and constant of these. This pigmentation is generally very densely distributed over the bust and arms. It covers the whole surface and especially the lower part of the neck to just below the clavicles in front, and to the shoulders behind, on the upper limbs, on the extensor aspect. It begins about the insertion of the deltoid and extends to the finger-tips, and is very thick on the forearms, on the flexor side, the boundary slopes down from the back to just above the elbows on the forearms. It is less dense on the ulnar side, but the rest is thickly covered to the wrists, while the palms are free, or nearly so.

On the lower limbs the thighs are rarely affected, and the legs below the knee, both back and front, are but slightly involved compared to the upper limbs.

This distribution is very characteristic and constant from the first, but in some cases it has fallen short of the above limits. Stern and Du Castel record cases in which there were only a few scattered freckles along with epitheliomatous tumor formation. With regard to extension it is not rare for it to go to the third rib, but in Duhring's case it extended to the mammæ in front, and to the lumbar region behind, and over the whole scalp, which is seldom affected, but in one of my cases the temporal region was involved.

Ireland, and Scotland. Archambault, in his "Thèse de Bordeaux," 1890, collected sixty cases, and gives a good *résumé* to date. Lesser and Bruhns in 1898 collected eighty-seven cases, and there have been fully twenty cases since. Nearly a score of cases have been recorded in America, seven in one family by Taylor of New York in the *Medical Record*, March 10, 1888.

* This case had been previously under Pringle.

† Pernet examined the growth, and found epithelioma with horny masses, not growing downwards from the epidermis, but apparently from the hair follicles.

Lentigines have been observed on the back of the foot, on the palms, and under the nails. In a recent case of Kaposi's a man, æt. twenty-five, there was freckling, large and small, all over the trunk and buttocks, as well as on the face, upon which there were many carcinomata, but in a few cases there may be only extensive freckling.

The color of the pigmentation varies from a pale yellow fawn to a deep sepia, and the size from a pin's head to irregularly outlined blotches half an inch across, but as time goes on they tend to increase in size, and in one of my cases large blotches developed on the forearms.

The second lesion consists of small white *atrophic spots* interspersed among the pigment spots on the face. They multiply and coalesce into comparatively large cicatricial-looking areas, especially about the orbit, and so diminish the pigmentation in those regions. The skin is white, shining, finely wrinkled, and either smooth or covered with thin white scales. Some contraction ensues, and consequently ectropion is produced. Small atrophic spots are sometimes left by the spontaneous obliteration of telangiectases.

Or on the larger white atrophic areas, the third lesion, *vascular telangiectases* appear. These may be stellate in flat tufts or in small tumors, and their bright crimson color on the white ground makes them conspicuous. Stellate and other striæ may also be seen scattered about amongst the pigment spots both of the face and limbs; they may be few or very numerous, and conspicuous.

Warts, some very small, others flatly convex, and many resembling senile warts, are scattered irregularly amongst the pigment, and ultimately may form the starting point for new growths. Thus in one of my cases a warty growth began on a pigment spot in front of the right tragus, it grew to the size of a finger-end, and then began to ulcerate, fungate, and ultimately formed a pedunculated mass as large as a Tangerine orange; its structure was papillomatous (Fig. 33).

Sooner or later there are *superficial ulcerations* with yellowish or greenish crusts scattered about the face, rarely on the limbs, and from these, as well as from the warts, tumors arise which, at first papillomatous, eventually become epitheliomatous and destroy the life of the patient. Some of these ulcerations are

the result of pus inoculation from ocular discharges, conjunctivitis and vascular pterygium being frequently present.

The healing of the ulcers, whether spontaneously or from treatment, produces cicatricial and distorted orifices, such as puckering of the mouth, dilated nostrils, and everted lids; hence with the scabbed ulcers a resemblance to the disfigurements of lupus, for which the disease has been mistaken.

The development of *tumors* occurs sometimes quite early in the disease, even in cases where the other lesions are slightly developed, but more frequently they only appear at an advanced stage.

The character of these neoplasms is diverse, and they may be quite innocent at first, and become malignant subsequently, or they may be cancerous from the first. This appears to depend a good deal on the mode of origin. The tumors growing from the warts and ulcers are papillary, and instead of fungating may be verrucose. If they are removed or fall off, as they sometimes do,* they will not recur in the same place; if they are allowed to go on, they become epitheliomatous. Epithelioma may also start directly from one or more of the numerous cicatrices, and while they are at first local, and can be effectually removed, the tendency for others to form increases, until they may be too numerous or extensive to deal with, but internal generalization is rare. The greater frequency with which the tumors and ulcers develop upon the right side of the face is remarkable. Three other minor symptoms remain to be mentioned. There is a *fine pityriasis of the scalp* in many cases, the scales being often brownish, while the red of the lips, and for a short distance inside, is white mottled with red, but the rest of the oral mucous membrane is free as a rule, but the tip of the tongue was once affected like the lips. There are *granular lids*, and the cilia of the lower lid are generally lost, and *vascular pterygium* is often present on the conjunctiva.

Variations.—All the cases resemble each other remarkably, but there are some variations, many of which have been mentioned in the description of the symptoms.

* In my third case a tumor grew in the fingerlike way from the left cheek for an inch and a half without ulceration, became strangulated at the base, and dropped off, leaving a cicatrix. Vidal and Jameson have had similar cases.

The question of *age* remains. Several have commenced in the first year, three and five months (Rotch's cases) * being the earliest recorded, while there is no limit at the other end. Although the great bulk begin in the second year, there have been a few, like Kaposi's and Hutchinson's, which began as young adults, and Falcao † of Lisbon brought forward a remarkable series of septua- and octogenarians, in whom, though freckled in infancy, no pronounced symptoms occurred until old age. In the oldest, æt. eighty-nine, the development of active symptoms had only commenced five years before. Out of her four children and twelve grandchildren, only one of the latter had xerodermia pigmentosa, which began when two years old, but all had freckles. The chief differences in the aged were that the warty and atrophic elements were conspicuous as compared to the pigmentary and telangiectic elements of childhood.

In a case of Pick's,‡ a man, æt. twenty-one, there was general lentiginous pigmentation, except on the face, elbows, and knees. The pigmentation was chiefly in the lines of cleavage, and there were no other symptoms, although the pigmentation was said by the patient and his mother to have been there from birth. Probably this case was not really a xerodermia pigmentosa.

Course.—The disease usually begins in the second year of life, but there is some discrepancy as to the mode of commencement, the accounts being generally derived from patients' friends. Brayton of Indianapolis saw a case which began in the sixth month of life, with small white atrophic spots upon the face; eleven months later the white spots had increased in size and number and a few brown pigment spots had appeared. There was general erythematous redness of the face and hands six weeks later, and in three months more, in July, disfiguring pigmentation followed, and some of the atrophic spots were a quarter of an inch across. In other cases freckles are said to have been the first lesions. In Rotch's case brown spots appeared on the face and arms at three months, then the telangiectases, and then the white atrophic spots, as shown under

* T. M. Rotch, *Archives of Pedriatrics*, vol. xv. (1898), p. 881.

† *Trans. Third Internat. Cong. of Derm.*, London, 1896, p. 280. Matzenauer has had a female case of sixty-six.

‡ Melanosis lenticularis. Neumann's "Festschrift," p. 1002, Plate XXXIII., colored.

"Lentigines" (p. 661); these may develop from telangiectases. This latter is not unlikely, as atrophic scarring may spontaneously develop in and obliterate nevoid telangiectases. In my fourth case the mother said that, when one year old, every fortnight she had attacks of a red rash on the face, followed by cracking and peeling; freckles appeared at eighteen months. Kaposi figures an early stage with erythematous redness of the center of the face and orbits and the back of the hands, with white atrophy interspersed, and a few freckles on the forehead and sides of the face, therefore like Brayton's case at eighteen months old. In Bronson's case when only four months old the mother noticed a disposition to redness across the bridge of the nose and beneath the eyes. After a slight exposure to the sun the face would be swollen and red for several days, and sometimes blisters were formed, once an acute vesicular outbreak occurred, and at five years old Bowen removed an epithelioma from the eyelid.

In Tenneson's and Danseaux's case at nine months old little red spots the size of a sixpence appeared on the cheeks. For several years these spots disappeared in winter and reappeared in the spring. Gradually the redness became persistent, the thinned skin began to crack with serous exudation, then pigment spots appeared on the face and neck, and the skin became parchmentlike and xerodermic.

At all events the freckling, telangiectases, and white atrophy are the earliest and most constant symptoms. The superficial ulcerations do not begin for some years, are probably caused by the eye discharges, and are extended by auto-inoculation.

Etiology.—Congenital predisposition is the only known cause, though probably some other factor, as an exciting element, is required.

Sex.—The number of males and females is about equal. In the 52 cases collected by Elsenberg, 27 were females and 25 males. It is not hereditary,* but shows a family prevalence,† and has then a tendency to select one sex. Twenty-six cases occurred in 9 families, and in 7 it affected one sex only. In Ruder's series, in a family of 8 boys and 5 girls, 7 boys were

* Falcao's case, where a granddaughter was affected, is the only exception I know of.

† Two of Taylor's cases were cousins of three other cases.

affected and the rest of the family were free. Kaposi, Taylor, and myself have had exceptions to this.

Age.—Nearly all the cases begin in the first or second year, the youngest being five months, the oldest eighty-nine years (Falcao's),* but the senile cases are very few. It thus resembles ichthyosis and prurigo in not appearing until some time after birth.

Hygiene has not been in fault, as many of the cases were in good circumstances, but

Season appears to have some influence, several having begun in spring or summer; and exposure to the sun has been suggested, and in Eulenberg's case proved to be an exciting cause, but it does not account for all cases, such as those commencing with atrophic spots in early infancy.

Pathology.—The most feasible explanation is that the disease is an atrophic degeneration of the skin, dependent upon a primary neurosis, to which there is a congenital predisposition. It is noteworthy that all the symptoms may be individually met with in the atrophic changes of the skin in old age; it is their simultaneous presence in the young that is the characteristic of the disease.

Kaposi's views are probably correct, that the alteration begins in the papillary body and epidermis, and spreads from these to the dermis, the pigmentation being due to the atrophy, as is often seen in other atrophies. Perhaps the vessels are the first affected, and besides the above changes, determine the formation of telangiectases by collateral dilatation.

According to Unna the warty growths are formed by the accumulation of irregularly stratified and fissured horny layers on an irregular granular layer, while the prickle layer sends processes into the dermis, which may or may not be connected with the glands.

The tumors are usually described as epitheliomatous, but in my case were distinctly papillomatous and not malignant for many years, when a single epithelioma formed in a cicatrix and was removed without recurrence. Melanotic sarcoma (so

* Some doubt has been thrown on the diagnosis of Falcao's cases, of which four were octogenarians, but Matzenauer's was sixty-six, and Herxheimer and Hildebrand's seventy, and there are a few others which approach these ages.

called) has been met with; probably it was melano-carcinoma. So many other varieties of new growth have been described as to make one suspect that the personal equation influences the christening.* Kreibich † examined growths from three cases of Kaposi's, and came to the conclusion that they belonged to medullary cancers, in which the basal layer is preserved, and not to the horny cancers.

Anatomy.—I have examined a piece of skin from the upper arm, containing the commencement of a small wart from the eldest girl described above, and a piece from the forearm of the boy containing a small telangiectasis; also the large tumor and a smaller one, and an ulcer which was beginning to fungate, all from the girl.

The results, briefly stated, were: The large tumor was substantially a papilloma, consisting of a large quantity of granulation tissue, with many spindle cells, tunneled with numerous large vessels. Imbedded at intervals amongst this tissue were aggregations of elongated cylinders, some branched; each was bounded by imperfect palisade epithelium, inclosing small epithelial cells, closely but irregularly arranged (Fig. 33).

The smaller tumor had similar granulation tissue, but the papillomatous part consisted of digital processes radiating from a common, very short pedicle and forming a section of a circle bounded by a thin layer of fibrous tissue. The ulcer showed great downgrowth of the interpapillary processes, with enormous proliferation of the rete itself. Comparison of this with the tumors made it probable that this proliferation, when continued, led in the course of the formation of the tumors, to first, separation of these processes from the rest of the rete, perhaps from ulceration at the surface, and then, by independent growth and further separation of the several parts, to the numerous elongated cylinders already described.

It is probable that the angio-myxomas of Taylor of New York were of this character, and also the "épithléiome verruqueux" of Vidal; but Kaposi, in his classical monograph, while figuring a very similar structure, shows also typical epitheliomatous nests, and other good observers have also testified to their being true epitheliomata.

There was no evidence whatever of such structure in my case, and the

* Taylor speaks of "angio-myxomas," and Vidal of "épithéliome verruqueux." Others describe them as "sarco-carcinomas." Pollitzer examined a tumor removed from my third case in 1890, and described a growth of mixed morbid elements, épithélioma predominating, but also, he says, sarcoma, myxoma, granuloma, cylindroma, etc. *Amer. Jour. Cut. and Ven. Dis.*, vol. x. (1892), p. 133. The patient did not grow a true epithelioma till six years later. See *Brit. Jour. Derm.*, vol. viii. (1896), p. 442. In the same volume are a description and colored plate of the thirteenth American case.

† Kreibich, *Archiv f. Derm.*, etc., vol. lvii. (1901), p. 123.

glands at the base of the pedicle of the larger tumor were healthy, but slightly enlarged. It is, however, highly probable that the epitheliomatous structure would have developed in them eventually, if the tumors had not been removed. An epithelioma from a cicatrix formed some years later.

In the skin the papillary layer was atrophied and deprived to a great extent of vessels; the rete over it was thinned, and formed a slightly wavy line. Pigment was imbedded in the cells, and occasionally there was a granule in the corium. The wart showed the usual structure, and there was a scanty infiltration of round cells below it, but the rest of the corium was normal.

These observations agree with those of Neisser, Vidal, and Leloir. In addition to the white atrophied part Neisser found atrophy of the epidermis, absence of pigment, and a regular line of demarcation between the epidermis and the papillary body. Vidal and Leloir found no diseased nerve fibers, but in the middle of the epidermis were nodules of epithelioma, which had, they thought, developed from the cutaneous glands. Okamura* examined the blood in three of Kaposi's cases, and found that there was an oligocythemia and a rather pronounced leukocytosis.

Diagnosis.—The commencement of the disease in early childhood; the formation of frecklelike pigment spots, preceded or not by erythema, the development of white atrophy with telangiectases, superficial ulcers, pigmented warts, and verrucose or fungating tumors, and finally epithelioma, together with the predominance of the lesions in exposed parts, form a history and picture which, viewed as a whole, scarcely admit of error, but mistakes have arisen from paying too exclusive regard to one or other feature.

The *atrophic* stage of some cases of *general sclerodermia* most nearly resembles it, for there may be thinned, white skin, with pigment in parts, telangiectases, and tension, so that a fold cannot be pinched up without difficulty, but the history is very different. Sclerodermia does not begin so early as most cases of this disease, and commences with increase of volume and boardlike hardness and immobility; the pigment, telangiectases, and atrophy are of later development. The pigment is not in frecklelike spots; nor are the telangiectases so large and conspicuous, being only stellate and striate. The position also is paraplegic, and not limited to any special regions. In the early stage the red spots have been mistaken for *measles*, the pigment spots for ordinary

* *Archiv f. Derm.*, etc., vol. li. (1900), p. 87.

freckles, the telangiectases for *nevi*, while in the later stage the cicatricial aspect and crusts have led to its being treated for *lupus*. All these errors can be avoided by taking all the points into consideration. See also hydroa æstivalis, which has been mistaken for xerodermia pigmentosa.*

Prognosis.—The prognosis is very bad, for although one case which began late did not develop tumors for thirty years, in the majority they appear in childhood, and when they are malignant the patient has but a few years to live, but by following the

Fig. 33.—A single lobe of the large papillomatous tumor. × 350.

treatment laid down the evil day may be staved off for many years. Two of my first three cases are still alive and fairly well, *i. e.*, nineteen years since they first came under observation. Herxheimer's case † was aged seventy, his first malignant growth occurring at the age of thirty. He also adduces cases to show that the early appearance of malignant tumors does not, as Lesser and Bruns aver, show that the disease will run a short and malignant course.

* Graf's case of xerodermia pigmentosa is evidently hydroa æstivalis. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 293.

† K. Herxheimer and Hildebrand, four new cases. Full abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 66.

Treatment.—The internal or external means that have yet been tried have not been of any avail to cure the disease. Arsenic, cod-liver oil, iodid of potassium, and various tonics have been given, without any beneficial results.

Much, however, can be done for the alleviation of the troubles consequent upon the ulcers and tumors, and the inflammatory condition of the eyes. Diligently bathing the eyes with boric acid lotion subdued the conjunctivitis, and relieved the eyes in my cases, and by stopping the discharge prevented the formation of fresh sores. The recent ulcers were healed with a diluted ammoniated mercury ointment. The older ones were scraped with a sharp spoon, dressed with a boric acid ointment, and healed satisfactorily. The tumors were excised, and the site healed readily. The improvement in appearance and the comfort afforded to the patients were very striking, and though, no doubt, fresh ulcers would form and tumors develop, if they were dealt with at once, it seems probable that the life of the patient would be prolonged, and perhaps the development of epitheliomata might in some cases be prevented. In the eldest of my cases the disease was quiescent for six years, and then an epithelioma developed in a cicatrix, but was removed in 1896 without recurrence up to 1901. Couillaud * claims to have obtained great amelioration, even with disappearance of a great part of the pigment, by intramuscular injections of calomel three centigrams, in vaselin and liquid paraffin.

ATROPHODERMIA ALBIDA.

Here the condition is stationary.

As I only know this affection through the description of Kaposi, who states that he has seen it repeatedly, and designates it as another type of xerodermia, I give it in almost his own words.

Symptoms.—The skin from the middle of the thigh to the sole, more rarely from the upper arm to the palm, is strikingly white in places, stretched, and difficult to pick up, with the epidermis extremely thinned, faintly glistening, wrinkled like gold-beater skin, and peeling off in thin, shining flakes. The sensibility is very great on the finger-tips, palm, and sole, on account of the

* *Annales de Derm.*, etc., vol. ix. (1898), p. 443.

stretching and insufficient epidermis covering, so that the use of the hands and feet is interfered with.

Diagnosis.—The condition remains stationary from the earliest childhood, and from this and the above symptoms need not be confused with atrophic sclerodermia.

Treatment.—Emollient ointments and plasters are useful to mitigate the dryness and tension of the epidermis, and the soles need protection against pressure in walking.

Pityriasis alba atrophicans.—Krösing's case,* which he compares with Jadassohn's, has some analogies with the above disease of Kaposi. The patient was a man of forty-four. The disease had commenced when he was thirteen as a dry pale, scaly patch on the left ankle; it slowly spread upwards, and reached to the knee in the course of twenty years, and subsequently to the groin. Scaly desquamation had occurred, but there had never been any redness or sign of inflammation. *Pari passu* with the upward spread, the skin, as far up as the knee, had become tense and atrophied, covered with small grayish-white scales and scaly crusts. On the thigh there was fine silver-gray scaling, and the skin was lax; there was a light brownish zone at the border. The right limb had been affected eight years, beginning at the same place and in the same way, and had reached the groin and lower border of glutei.

Jadassohn's case was universal and had developed in six months with marked pruritus. Atrophy of the skin, as in Krösing's case, supervened after ten or fifteen years.

Histologically Krösing found that the disease was not inflammatory, and was due to abnormally rapid cornification of the upper epidermal layers, resulting in an atrophied rete, which spread both vertically and horizontally and led to tension of the skin.

DIFFUSE IDIOPATHIC ATROPHY.

Anomalous cases of diffuse atrophy have occasionally been reported, such as Wilson's† cases of "General Idiopathic Cutaneous Atrophy," Schwimmer's‡ "Atrophia Cutis Uni-

* Krösing, *Derm. Zeitschr.*, vol. iii. (1896), p. 57. Jadassohn, *Fourth Germ. Derm. Congr. Trans.*, with stereoscopic plates.

† Wilson, p. 394.

‡ Schwimmer, case 20, p. 189.

versalis," which are probably atrophic general sclerodermia, and Atkinson's * " Unilateral Idiopathic Cutaneous Atrophy," which was probably morphea. Glax,† Geber,‡ R. W. Taylor,§ and others have reported similar cases. Morphea may undoubtedly produce atrophic thinning of the skin from the first, and I have seen mixed cases in which there was atrophy in one part and parchment induration in another, in the same patient.

Diffuse idiopathic atrophy of the skin apparently primary does, however, exist, both congenital and acquired, as in the following case by Buchwald ‖ of Breslau.

The patient was a strong, healthy man, in whom the disease began ten years previously, when he was twenty years old, without apparent cause; it began on the knees and spread mainly upwards, soon reaching its present limits, but the change in the skin was not completed for a year, since which there had been no further alteration, except occasional ulcers on the leg and foot in winter. The whole of both thighs, except in the parts adjacent to the scrotum, were affected; the skin was quite soft and in folds, and when pinched up the folds remained erect; the surface was dry, brownish, and desquamating, with dilated veins, which, when he stood, made the limbs cyanotic. Microscopically there was total atrophy of the papillæ and fat, partial atrophy of the sweat glands and hair-sacs, and the connective tissue was swollen and densely infiltrated with cell nuclei.

Unna¶ has had a very similar case in a man of fifty. He found atrophy of the rete; disappearance of the papillary body,

* *Richmond and Louisville Medical Journal*, December, 1887.

† *Viertelj. f. Derm. u. Syph*, Heft i, 1874.

‡ *Allg. Wiener med. Ztg.*, No. 35, 1874

§ R. W. Taylor, " Localized Idiopathic Atrophy of the Skin," *Amer. Jour. Cut. and Gen.-Ur. Dis.*, April, 1893, and Abs. *Brit. Jour. Derm.*, vol. vi. (1894), p. 31.

‖ *Viertelj. f. Derm. u. Syph.*, Heft iv., 1883, with plate.

¶ (Unna) Neumann's " Festschrift," 1900, p. 910. Colored plates, clinical and histological, and a classification as follows:

Diffuse idiopathic atrophies.

(1) Universal—(*a*) senile; (*b*) cachectic.

(2) Progressive—Buchwald, type, etc.

(3) Regional—(*a*) kraurosis; (*b*) Kaposi's second type of xerodermia.

To which he might have added congenital universal atrophy.

For his circumscribed and secondary atrophies the original paper must be referred to.

elastic tissue, and fibrillary structure of connective tissue; atrophy of all the hair structures and sebaceous glands, while the nerves were intact.*

Since Buchwald's case was published, Behrend † has reported a case of congenital idiopathic atrophy in an infant, æt. seventeen months, in which the skin of the whole body, except the buttocks, was affected, together with onychogryphosis of the finger-nails.‡ I have met with a similar case. Touton § has met with a third case, a man, æt. fifty-seven, in which the atrophy was acquired, the lesion occupying the upper and lower extremities, beginning when he was thirty-five years old, and slowly extending upwards towards the trunk. Another case is reported by Pospelow; ‖ the left upper extremity of a man, æt. fifty, was affected. Groen ¶ met with a case of a sailor, æt. forty-seven, in whom there was atrophy of the skin from just below Poupart's ligament to the toes and soles. The skin was thin, transparent, reddish, or cyanotic. No cause was discovered.

Kaposi ** and Colombini †† have published cases in which there was diffuse atrophy affecting the whole surface very rapidly, for which they propose the name of dermatitis atrophicans. In Colombini's case, a woman, æt. fifty-five, the condition came on after a chill, beginning on the legs, with painless red spots level with the skin and of various sizes. They increased in number and size and invaded the whole of the limbs, and the trunk partially; atrophy followed, the skin becoming shiny, slightly corrugated, finely wrinkled, and hung in folds, and was bluish or

* Jordan, in relating a case of diffuse senile atrophy and pigmentation of the skin, gives references to many cases. *Monatsh. f. p. Derm.*, vol. xxv. (1897), p. 373.

† Behrend, *Berlin. klin. Wochensch.*, 1885, No. 6, p. 88. Abs. in *Viertelj. f. Derm. u. Syph.*, vol. 1885, p. 346.

‡ Author's Atlas, Plate XC., Fig. 13, showing wrist, hand, and nails—detailed description in the text. Unna disputes the diagnosis of Behrend's case, calling it a hyperkeratosis. Mine was certainly an atrophy.

§ Schwimmer, case 20, p. 189.

‖ *Richmond and Louisville Medical Journal*, December, 1887.

¶ *Viertelj. f. Derm. u. Syph.*, Heft i., 1874.

** Kaposi, *Annales de Derm.*, etc., vol. ix. (1898), p. 79.

†† Colombini, "Atrophia Idiopathica," *Monatsh. f. prak. Derm.*, xxviii. (1899), p. 29. Full abs. *Brit. Jour. Derm.*, vol. xi. (1899), p. 258, with references.

dusky-red; the hair was thinner, shorter, and had lost color. The patient felt cold, constant itching (slight), and lost weight and strength.

Neumann * had a similar case, also from a chill. Bronson's † case was symmetrical on the extremities, but the early stage was unknown. G. P. Elliot had another case exactly like Bronson's, in which a violet zone preceded the atrophy.

Other cases of atrophy which may be referred to are that of Zinsser ‡ in a child of twelve, in spots on the hands and feet; that of Beer,§ which began at ten; of Béclère and Leredde ‖ of Lion,¶ of Jordan,** a senile case; of Souques and Charcot †† in a girl of twenty-one, which they compared to senile atrophy and called it geromorphism; it began with red lumps at the age of eleven, and left the whole skin in folds and wrinkles. Bechert's,‡‡ a woman of fifty-one, in which there was thinning, wrinkling, dryness, and brown discoloration over the limbs and part of the trunk, which began in her fifteenth year in the hands, when she had to have them very often in cold water. This case favors the view that these atrophies are the result of circulatory disturbance, chiefly stasis, but some cases are considered to be angio-neuroses, and a third view is that of chronic inflammation, as evidenced by the cell infiltration, and shrinking of the elastic and muscular tissues, and Heller §§ regards some as of nevus origin.‖‖

* Neumann, *Archiv f. Derm u. Syph.*, 1898.

† *Jour. Cut. and Ven. Dis.*, vol. xiii. (1895), p. 1; and Elliot's paper, p. 152, illustrated and gives references.

‡ *Archiv f. Derm. u. Syph.*, vol. xxviii. (1894), p. 345. Abs. in *Annales*, vol. v. (1894), p. 1171.

§ Reported in *Annales*, vol. iii., 1892.

‖ *Annales*, vol. v. (1894), p. 545.

¶ *Archiv f. Derm. u. Syph.*, vol. xlv. (1898), p. 213.

** *Monatsh. f. Derm.*, etc., vol. xxv. (1897), p. 373.

†† *Nouvelle Iconographie de la Salpêtrière*, May, 1891, p. 169. Abs. in *Annales*, vol. iii. (1892), p. 873.

‡‡ *Archiv f. Derm. u. Syph.*, vol. liii. (1900), p. 35, with colored plate of hand and some references.

§§ Heller's case was a man of forty-five, had been affected all his life with patches of atrophy. Another case, a man of forty, had a patch on the back of right hand for three years. He gives a table of seventeen cases. Neumann's "Festschrift," 1900, p. 251.

‖‖ For further details see Krzystalowicz, *Histology*, *Monatsh. f. prak. Derm.*, vol. xxxiii. (1901), No. 8.

Kraurosis, or shriveling, is an atrophy of the skin of the external genitals in women, first described by Breisky,* though Weir and Tait had previously recorded cases without appreciating their nature. It is a progressive cutaneous atrophy, limited to the vulva, and occurs chiefly after forty, but sometimes earlier, and in two cases after removal of the uterus, etc. The first microscopic changes are small vascular hyperesthetic areas at the orifice of the vagina, which is narrowed from the skin being thinned and tense. The hair may be shed. The primary changes are inflammatory, but the etiology is unknown. It is often associated with pruritus vulvæ (one-third Ohmann-Dumesnil), and epitheliomatous ulceration has been present in some cases, probably a consequence of the prolonged scratching. Leukoplasia precedes the epithelioma and the kraurosis, according to L. Perrin; and complete extirpation of the affected area is strongly advocated by some authors to prevent the formation of epithelioma.

Symptomatic Atrophy may be simple or degenerative, traumatic or pathological. In the simple form, of which pregnancy scars (lineæ albicantes) are the most familiar examples, the lesions are in appearance and anatomy the same as in idiopathic striæ. They are especially developed during pregnancy, and at first are bluish-red from hemorrhage, very itchy, and get white eventually. Any other cause of distention, such as ascites, ovarian or other tumor, may produce them in the abdomen, and lactation has the same effect in the breasts. I have also seen them on the shoulders and elsewhere from large symmetrical lipomata, and over the lower ribs and back from violent coughing. A similar kind of lesion, though usually classed with ordinary scars, is the atrophy from external pressure, such as is produced by corns, favus-crusts, etc., and the depressions remaining after absorption of inflammatory or other infiltrations of the corium, which ensue in many syphilitic lesions,† lupus,

* Breisky, *Zeitschrift f. Helkunde, Prag.*, March 15, 1885. See also a paper by Reed, *N. Y. Med. Jour.*, September 29, 1894, p. 385, with histology by H. W. Bettmann, micro-photos. Weiss on Pathology; Neumann's "Festschrift," 1900, p. 944; L. Perrin, "Leucoplasie et ses rapports avec le Kraurosis Vulvæ," *Annales de Derm.*, vol. ii. (1901), p. 21.

† Under Auspitz's name of liodermia, Finger describes an extreme instance in *Viertelj. f. Derm. u. Syph.*, vol. ix. (1882), p. 21, with colored plate.

leprosy, and lichen planus. These scarlike marks, if of small size, gradually disappear or grow less distinct, from the contraction due to the natural elasticity of the skin.

Degenerative Symptomatic Atrophy. Here, fatty, hyaline, and lardaceous changes occur in the same way as described in idiopathic senile, degenerative atrophy, and are the consequence of chronic dermatitis, such as eczema, pemphigus foliaceus, pityriasis rubra, etc., perhaps by its setting up an endarteritis, which is always present to a greater or less extent in these cases, and so diminishing nutrition.

Treatment for all these forms of atrophy is unavailing.

ATROPHIA CUTIS SENILIS.

Synonym.—Atrophodermia senilis.

The condition is usually associated with general signs of senile degeneration. It may affect the whole skin, its appendages, and subcutaneous tissues, may be simple or quantitative, degenerative or qualitative, or more often both.

The skin is more or less in folds from loss of fat, less elastic, slightly shrunken, wrinkled, and from atrophy of the glands is dry, sometimes with fine branny desquamation; it feels thin, and is transparent and shining. The hair is lanugo-like or absent. Pruritus, which may be severe and persistent, is sometimes present, but the reaction to scratching is slight or absent. In a case of Harrison's of Bristol a condition like white lichen planus was produced. It may be paler, but is more often darker than normal, sometimes even a tawny brown, or it may take the form of freckles,* often very large and dark. Various new growths are liable to arise. The arms, trunk, and neck may be studded with numerous flat warts, deeply pigmented, of a dirty brown or black color, and if the horny covering be picked off, hypertrophied papillæ are exposed, or the dilated orifice of a sebaceous gland which was plugged with accumulated epidermis. Some pendulous sacs of skin, the contained fibromata having atrophied, are frequent on the neck and

*See under Eczema a case of freckles following it; also Hutchinson on "Tissue dotage," *Archives*, vol. iii. p. 315.

trunk; and scattered about are bright crimson, very slightly raised spots, consisting of tufts of dilated vessels. Soft mole-like growths may also be present, and some one or other of these ill-nourished structures often take on a malignant growth.

Epithelioma and rodent ulcer are especially the new growths of old age, but wens, senile lupus, senile scrofula, and the small fibromata alluded to, are also not infrequent. Another condition is the presence of flat yellow discs about an eighth of an inch in diameter, due to hypertrophy of the sebaceous glands (see that disease); they occur chiefly on the forehead and other parts of the face.

Anatomy.—Neumann found the epidermis thinned and forming a wavy line over the shrunken papillary layer. The corium generally was thinned and its connective tissue corpuscles fewer and smaller, with pigment granules among the fiber bundles; the vessels were in some cases destroyed, in others enlarged, and contained pigment masses. The papilla of the hair was often shrunken, and the cells of the outer root-sheath cornified and sometimes bulging out the follicle; many of the sebaceous glands were enlarged, at least in some of their acini, which were filled with crumbling epidermic masses; the fat cells were here absent, leaving the connective tissue meshes empty.

Degenerative Atrophy. In this the connective tissue fibers lose their definition from being clouded with granules, and become changed into more or less homogeneous tough or brittle masses; these changes are known as granular or vitreous degeneration, and some speak of lardaceous and fatty changes.

Colloid degeneration of the corium is described along with new growths.

STRIÆ ET MACULÆ ATROPHICÆ.

Synonym.—Atrophodermia striata et maculata.

Symptoms.—This condition may be idiopathic or symptomatic. The idiopathic form occurs as streaks and spots; the "streaks" are pearly or bluish-white, glistening scarlike lines from one to several inches long and a quarter of an inch or more wide. They lie in two or more parallel lines, inclined at various angles to the longitudinal axis of the body, following the natural lines

of cleavage of the skin, and are situated chiefly about the buttocks, the anterior border of the ilium, the trochanters and thighs, rarely on the neck, trunk, or arms. They are slightly depressed below the surface, and the skin is evidently thinned there.

Wilson has described cases of linear atrophy which he considered due to defective nerve supply, but one of the cases followed a blow, and another was the consequence of violent sneezing, so that the possibility of a traumatic origin cannot be quite excluded. The lesions were situated in the course of the supra-orbital nerve, beginning by a faint white line with slightly red borders, the white part being widened and deepened; sensibility was lost, and the skin became dry. Subsequently the sides of the sulcus were drawn together, leaving "a deep linear groove, like a sword-cut." Another case* bears out his contention with greater probability. A young lady was turned out half-dressed on a cold night, as the house was on fire, and straight parallel lines of atrophy developed on the forearm. It is very probable that they are related to, perhaps only variants of, supra-orbital sclerodermia, which is often associated with atrophy.

Maculæ Atrophicæ. The "spots" are less common; they are from a lentil to half a crown in size, also shiny white or bluish, and level with the skin or slightly depressed, finely wrinkled, usually isolated, and are seen mostly on the trunk and neck. Both lesions make their appearance unnoticed by the patient, as a rule, and give rise to no inconvenience, but they never go away entirely, though they may get less obvious from the natural elasticity of the healthy skin drawing the sides together. There is much reason to believe that this is a secondary condition. Liveing observed a case of the macular variety, where the spots were in all stages, and found that the first was characterized by slight redness and by well-marked hypertrophy rather than atrophy, for the spots were raised above the skin, and were hard and fibrous. This was soon followed by the second characteristic white stage, and in some of them by a third, consisting of a shrinking process, which drew the healthy surrounding tissues together, and the spots became barely perceptible. Taylor of New York and Tilbury Fox also mention hyperemia

* *Jour. Cut. Med.*, July, 1867.

as an antecedent condition. Jadassohn * described a case where the spots varied from a lentil to a shilling all over the extensor aspect of the limbs in a young woman; they were shown to have followed light red, slightly raised papules. In Sherwell's case † the spots were all small, situated on the backs of the hands, feet, and all up the leg, below the knee, and on the upper limbs also. They were said to have begun with red itching papules which became white and left these pits. In Pospelow's case ‡ the atrophic spots occurred in a patient with defective circulation following on petechiæ; microscopically he found inflammation of the vessel walls and absence of elastic tissue; while considering it of the same nature as Jadassohn's case he proposed to name it purpura atrophicans. Heuss § records a case of the Jadassohn type. He found perivascular infiltration in the early stage, and in the later almost complete disappearance of the elastin in the atrophic area.

The vitiligo of Bateman, which differs from that of Willan, appears to belong here, but the tubercles are white from the beginning; he describes it thus: "It is characterized by the appearance of smooth, white, shining tubercles, which rise on the skin, sometimes in particular parts, as about the ears, neck, and face, and sometimes over nearly the whole body, intermixing with shining papulæ. They vary much in their course and progress; in some cases they reach their full size in the course

* "Ueber eine eigenartige Form von 'Atrophia Maculosa Cutis,'" *Verhandl. der deutsch. derm. Gesellsch. Congress*, 1891. He discusses many other reported cases.

† *Amer. Jour. Cut. and Gen.-Urin. Dis.*, vol. xii. (1894), p. 499.

‡ Shown at the Derm. Soc., Moscow, in March, 1899.

§ *Monatsh. f. prak. Derm.*, vol. xxxii. (1901), Nos. 1 and 2, with colored histological plate and many references. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 198. He classifies the cases as follows:

1. *Primary or idiopathic.* Atrophia maculosa cutis, including Thibierge's, Jadassohn's, Heuss', Galewski's, and Mibelli's, perhaps also Besnier's cases.

2. Secondary forms in connection with:

α. Vascular changes—as in Pospelow's, Nikolsky's, and Hallopeau's cases.

β. Tumors, especially of connective tissue nature. De Amicis' and Plonsky's cases.

γ. Followed by growths, especially keloids—Jadassohn, Schwimmer, Schweninger and Buzzi cases.

of a week (attaining to the magnitude of a large wart), and then begin to subside, becoming level with the cuticle in about ten days. In other instances they advance less rapidly, and the elevation which they acquire is less considerable—in fact, they are less distinctly tubercular. But in these cases they are more prominent, and, as they gradually subside to the level of the surface, they creep along in one direction, as, for example, across the face or along the limbs, checkering the whole superficies with 'a veal-skin' appearance. All the hairs drop out where the disease passes, and never sprout again; a smooth, shining surface, as if polished, being left, and the morbid whiteness remaining through life. The eruption never goes on to ulceration."

Tilbury Fox * records a case which he considers referable to Bateman's vitiligo, but the tubercles were slower in their evolution.

Etiology.—Both striæ and maculæ are seen in adults of both sexes, and at all ages, but Schultze found that thirty-six per cent. were women who had never borne children, and only six per cent. were men, and they were more frequent in tall men. This applies only to the striæ, which he considered due to the stretching of the skin during the expansion of the pelvis and growth of the limbs. Morris showed a case at the Dermatological Society of a girl of twelve, in whom there were long wide streaks across the thighs, apparently due to rapid growth, as she had had no illness. The cases of striæ which are sometimes observed in convalescence from typhoid fever in the limbs of children and young adults are chiefly across the ankles, and presumably due to the pressure of the bedclothes producing overextension, when the nutrition of the skin is damaged by the fever. When, as in Duckworth's case,† they are across the thighs, they are in some cases probably due to the rapid growth often observed under such circumstances. In Shepherd's case ‡ in addition to broad stripes across and above the knee there were atrophic spots, which was the earliest lesion, and the striæ were formed by their enlargement and coalescence. These atrophies

* *Lancet*, June 28, 1879.

† Duckworth, after relating his own case, gives many references in *Brit. Jour. Derm.*, December, 1893, vol. v.

‡ *Amer. Jour. Cut. Dis.*, vol. ix. (1891), p. 59.

occur in the most severe adynamic cases. Osler has observed similar striæ on the arms and legs after scarlet fever. Examples of what may be called distention striæ may be seen on the thorax from pneumothorax, rapid development of fat,* either on the trunk or limbs, rapid growth of a limb either ordinary or extraordinary, as in some cases of diseased bone attended with elongation, the distention of pregnancy, or ascites, or flatulence. In two of Hanot's cases lymphatic varices in association with ascites left striæ atrophicæ when the varicosity subsided. After tapping Féré and Schmidt found that in fifteen per cent. of epileptics there were striæ in the lumbo-sacral region, attributed to disproportionate length of the spinal column in that region.

In Ohmann-Dumesnil's † case, a girl, when two and a half years old, had a deep burn on the radial side of the wrist close to the root of the thumb; when seven years old the whole limb was, to some extent, wasted, and on the arm and forearm were five atrophic, scarlike, linear striæ three-eighths of an inch wide, and lying over the brachial and radial nerves. There was also slight hyperesthesia. These lesions were clearly neurotic. No satisfactory explanation of the maculæ has been afforded. Wilson's cases and the antecedent hyperemia of some others favor to some extent a tropho-neurotic origin, in some instances at all events, a view Schwimmer strongly advocates.

Anatomy.—Langer and Kaposi have found atrophy of the epidermis, obliteration of the papillæ, separation of the connective tissue fibers, and diminution of the glands, vessels, hair-follicles, and fat lobules, partly from atrophy, partly from separation.

In Plate XV. of the International Atlas Schweninger and Buzzi describe a case of a rare affection, which they designate **Multiple, Benign, Tumorlike, New Growths.** It has also been observed by M. Morris, Colcott Fox, and Van Hoorn.

Clinically, the lesions are soft, round, or oval projections, from a lentil to a bean in size, more or less white, with a slight bluish or slate color in some of them. Most of them are bladderlike, and can be pressed into the skin by the finger, pro-

* R. W. Taylor, in *N. Y. Med. Jour.*, January 2, 1886, published with colored lithograph a remarkable instance of striæ from obesity and flatulence.

† *Brit. Jour. Derm.*, vol. ii. (1890), p. 246.

jecting again immediately like a hernia. The larger ones are flattened and slightly puckered, and harder than the smaller, from which they develop. They undergo spontaneous involution, and leave only flaccid, loose, foveated scars. They appear very gradually and without sensory symptoms on the trunk, shoulders, and thighs, and ultimately become numerous, as none disappear entirely, and others keep forming. Three out of the four cases were women. One had had syphilis, and she stated that the lesions appeared on a secondary eruption, which did not ulcerate; but in the other cases there was no evidence of syphilis.

Microscopically, Buzzi found that they were not true tumors, but the projections were produced by the skin alone, in which the elastic fibers were quite absent, with slight increase of them at the border of the pseudo-tumor. Around the vessels of the superficial horizontal network and the skin appendages there were round-cell accumulations and evidence of proliferation of the compound elements. The passive retraction of the elastic tissue was the primary change, as it was constant in the smallest lesions, which appear therefore to belong more to atrophy than to new growth, resembling somewhat maculæ atrophicæ, but forming projections instead of depressions.

I have seen very similar lesions associated with fibromata of the ordinary form, when some of them have been absorbed. It is probable that they are the last phase of more than one pathological process.

From the nature of the lesions treatment has not been, nor is likely to be, of any avail.

GLOSSY SKIN.*

Synonym.—Atrophodermia neuritica.

Symptoms.—Under this title Paget, Weir Mitchell, and others have described an atrophy of the skin in the area of a nerve affected by disease or injury. It chiefly attacks the extremities, perhaps only one or two fingers; the skin of the affected part

* *Literature.*—Paget, "Some Forms of Local Paralysis," *Medical Times and Gazette* March 24, 1864. Weir Mitchell, "Injuries of Nerves and their Consequences," (Philadelphia, 1872). Moorhouse and Keen, "Gunshot Wounds and Other Injuries of the Nerves" (Philadelphia, 1864),

becomes very dry, smooth, and glossy, like a thin scar; the fingers are tapering, hairless, and almost void of wrinkles, and the color is pink or deep red, not unlike chilblains, or mottled with patches of red and white, and the skin is easily inflamed, excoriated, and fissured. A severe and persistent burning pain (causalgia) precedes and accompanies this condition, and is very characteristic. The appendages of the skin share in these defects, hence the dryness, loss of hair, and changes in the nails, which Mitchell and Moorhouse and Keen regard as in themselves quite distinctive. The nail is curved both longitudinally and transversely, and there is sometimes thickening of the cutis beneath the free end. In some cases the skin of the third phalanx retracts, partially exposing the sensitive matrix; at the free end the nail is also more separated than usual from the cutis, which is seen as a notched border through the nail. In the toes, with painful and recurring ulceration at the angles, there is less deformity. Instead of dryness the sweat is often increased considerably, is intensely acid, and sometimes offensive.

Etiology.—It follows such injuries to nerves as do not completely sever them, or it may arise from a neuritis being set up in a wound. It has also been found as a complication of gout, rheumatism, non-tuberculated leprosy, and following shingles, and in a few cases of chronic myelitis, in one of which there was associated muscular atrophy.

Pathology.—The disease is undoubtedly dependent upon inflammation of the nerve supplying the affected area, whether the neuritis is set up by disease or injury. In the cases associated with disease of the cord the condition of the nerves was not examined. Whether the neuritis is interstitial or parenchymatous, or both, has not been investigated. In a case reported by A. E. Watson* of apparently spontaneous origin, the "causalgia" was very acute, lasted about twenty-four hours, and shifted from one hand to the other; the right hand suffered two attacks. The fingers were white and shiny during the attacks. The history suggests that the lesion was in the periphery of the nerve.

Treatment.—The condition tends to get well spontaneously, and only requires, therefore, protection from cold and other

* *Lancet*, vol. i. (1890), p. 647.

injurious influences. The causalgia is generally best relieved by the constant application of cold water, but in Watson's case this aggravated the suffering, and immersion in very hot water produced immediate removal of the pain.

PERFORATING ULCER OF THE FOOT.

This somewhat rare disease comes under the care of the general surgeon rather than the dermatologist, and requires, therefore, only a brief notice here. Its neurotic origin has been well brought out in a paper by Savory * and Butlin, whose observations have been confirmed and extended by subsequent observers.

The exciting cause is pressure or injury of some kind to a foot in which the protecting nerve influence is in abeyance, either from damage to the nerve center, as in locomotor ataxy, which is the most common cause; to the nerve trunk (the posterior tibial), as in syphilis, leprosy, or other cause of neuritis; or to the peripheral terminations of the nerve, as in peripheral neuritis.

Gasguel † collected 91 cases, 84 of which were in males. The age was stated in 79: 3 were under twenty, 4 between twenty and thirty, 22 between thirty and forty, 31 between forty and fifty, and 19 were over fifty. In 69 cases there was a central nervous lesion, 8 times there was peripheral nerve lesion, and 14 were diabetic. Thirty-two had tabes, 17 general paralysis, 8 symptoms of alcoholism, 4 traumatic disease of the cord; 8 had various cord lesions, 1 being Friedreich's disease.

Symptoms.—Although the foot is the usual seat of the so-called ulcers, Terrillon ‡ showed a case to the Société de Chirurgie where the hand was affected at the junction of the ring finger to the palm, and Ménétrier § records several ulcers on the palmar surface in a syphilitic whose hands were con-

* *Med. Chir. Trans.*, vol. lxii. (1879), p. 373, with colored plate and microscopic drawings of nerves and full bibliography. For some recent references see also Tomasczewski in *Münch. med. Wochensch.*, No. 20, May 20, 1902, p. 843.

† "Thèse de Paris," July, 1890.

‡ Quoted in *Lancet*, April 11, 1885, p. 676.

§ *Annales de Derm.*, etc., vol. vii. (1886), p. 30.

stantly wet and dry at his work.* The most common position is where there is most pressure, such as over the metatarso-phalangeal joint of the great or little toe, or the pulp of the great toe, always on the plantar surface. There may be more than one on the same foot, and both feet may be affected. It is more correctly a sinus than an ulcer, and often begins by suppuration under a corn, burrowing into the soft tissues, and when the horny covering is thrown off a sinus is exposed, leading down to the bare bone; sometimes the process is more acute, and a slough is rapidly formed, but the result is the same. As the pressure from walking is continued, the epidermis round the ulcer becomes much thickened, and forms a thick horny collar round the sinus; occasionally there are granulations round the orifice. It is very indolent, generally painless, even on pressure, anesthesia of the neighborhood being the rule; but occasionally there is hyperesthesia, and there is a tendency to abundant and fetid perspirations of the affected foot.

The only affection from which it requires to be distinguished is an ordinary *suppurating corn*, unconnected with damage to the nerve of supply; this will be distinctly painful, the skin round will be very sensitive, and although there may be a sinus leading down to necrosed bone, treatment on ordinary surgical principles will always be satisfactory. In the true perforating ulcer the reverse is the case, although the sinus may be induced to heal under very prolonged rest. The bucket-leg is the most practicable way of resting the foot, without absolutely laying the patient up, but it is sure to break out again as soon as he begins to walk. Amputation of more or less of the foot by Chopart's, Syme's, or Pirogoff's operation is recommended in most surgical works, but the cause being unremoved, a fresh ulcer is very apt to form in the stump. The treatment suggested by Treves seems rational, and is successful in most cases. The thickened epidermis round the sinus was pared down completely, after softening by repeated poultices, and the sinus filled up with a cream of salicylic acid, glycerin, and ten minims of carbolic acid to the ounce, and after healing, which soon occurred, a

* Fitch is quoted by Montgomery of California, as having observed "a perforating ulcer of the wrist, which bored clear through the carpus," in an infant of six months old, one of a leper family.

Instances of spontaneous cure in a leper family. D. W. Montgomery, *Med. Rec.*, April 10, 1902.

thick perforated felt pad was worn over the sore, the hole corresponding with the former sinus, and care was taken, by attention to the construction of the stockings and boots, to prevent fresh injury. Beaven Rake, who had a large number to treat in the Trinidad Leper Asylum, recommends that stretching of the sciatic or posterior tibial nerve, free incision of the ulcer, and opening up the sinus, should be tried before amputation is resorted to. Chipault reported five cases of trophic perforating ulcers successfully treated by stretching the plantar nerves. In some cases it might also be desirable to stretch the musculocutaneous and external saphenous nerves. The operation should be at some distance from the ulcer to avoid infection of the incision from it.

MORVAN'S DISEASE.*

Synonyms.—Analgesic paralysis with whitlow; Syringomyelia; *Fr.*, Panaris analgésique.

This is a rare disease first described by Morvan of Lannilis in Brittany in 1883. It is a trophic affection from disease of the spinal cord which only requires brief mention here, although its interest to dermatologists has been considerably increased since Zambaco Pacha put forward the theory that it is really an atavistic and attenuated form of leprosy.

Symptoms.—The first symptom is pain in the extremities, fol-

* *Literature.*—Five memoirs by Morvan in *Gazette Hebdomadaire*, 1883–1889, and by Prouff, *loc. cit.*, 1887. Lecture by Charcot, *Progr. Médical*, March, 1890; translated *Phil. Med. Bulletin*, Nos. 10 and 11, 1890, from which the above description is chiefly taken. In *Brit. Jour. Derm.*, vol. ix. (1897), p. 207, is an abs. of P. M. on one of the cases in Charcot's lecture. See also "Les altérations cutanées et la syringomyélie," G. Thibierge, *Ann. de Derm. et de Syph.* Bruhl's "Contribution à l'étude de la syringomyélie," Paris, 1890, gives a very complete account. Also a case by Hughlings Jackson, *Lancet*, February 20, 1892. In Part VI. "Internat. Atlas," with Plate XVIII., L. Jaquet gives an account of a case of syringomyelia, with extensive trophic ulcerations on the head, neck and shoulder. "Morvan's Dis.," Hogarth Pringle, *Brit. Jour. Derm.*, vol. v., July, 1893, p. 193. Cagney on "Syringomyelia and Leprosy"—a good *résumé* of the then known facts, *Trans. of the Derm. Soc. Great. Brit. and Ireland*, vol. i. (1895), p. 53. "Morvan's Dis., Syringomelia and Leprosy," Jeanselme, *La Presse Médicale*, No. 62 (1897), p. 44. Good abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 454, one of the cases.

lowed by analgesia, first of one side, then of the other, and then the formation of a succession of whitlows, which are usually painless, though the early ones are sometimes painful. The whitlows are attended with, or are the result of, necrosis of the phalanges, which are cast off with much consequent deformity and crippling. There are usually only from two to six of these whitlows, but one of Morvan's cases had nine. They affect the upper extremities chiefly, but the toes have been involved in some cases.

They may be distributed over many years, sometimes with long intervals of freedom. In Prouff's case, the earliest and longest on record, the duration was forty years (from the age of twelve to fifty-two), and there were twenty years between the first four whitlows on the right hand and the last four on the left. A patient of mine, a woman, æt. fifty-one, had suffered from whitlows on the right index and left thumb for thirty-five years. The first appeared on her right middle finger, but all the rest on the above-mentioned digits; she was scarcely ever quite free; the longest interval she remembered was two months. They were painful, and there was some deformity of the terminal phalanges. There were no other symptoms of Morvan's disease.

There may be other trophic lesions of the skin, of the forearms and hands, viz.: fissures, shallow or deep, ulcers in the natural folds of the skin, almost amounting to the perforating ulcer, extending with suppuration to the tendinous sheaths (Charcot). Patches of bullæ and pustules sometimes are present. Further vaso-motor symptoms occur chiefly of the hands. Pospelow * had a case with Raynaud's disease and concomitant sclerodactylic erythromelalgia and edema of the hands and forearms, irregular herpes zoster gangrenosus and analgesic whitlows, in association with spinal glioma. A dusky color only with lowering of temperature is observed more frequently than a typical Raynaud.

Other trophic symptoms are muscular atrophy and paresis of the forearm and hand muscles, and contraction of the fingers, with "*main en griffe*" with impaired electrical contractility. The paralysis seldom extends beyond the elbow; Morvan said

* In "Festschrift" of F. J. Pick in 1898, illustrated. Reviewed in *Brit. Jour. Derm.*, vol. x. (1898), p. 418.

it never did. Morvan stated there was complete analgesia and anesthesia, affecting the sense of pain, touch, and temperature, while in typical syringomyelia tactile sensation is preserved, that of pain is absent, and the sensations of heat and cold are more or less lost. But this is only true of some cases, since Joffroy, with and without Achard, and Marinesco have found syringomyelia at two autopsies of typical cases of the disease of Morvan, and in spite of the latter's protests there is now a conviction that this condition is only a clinical variety of syringomyelia, in which the cavities are often produced by the absorption of gliomata, the central and posterior portions of the cord being the parts chiefly involved.

Most cases occur between twenty and fifty, but twelve and sixty years are the extremes observed. It is more common in men than women. Hanot's case started definitely from a chill, the man having continued his work after having fallen into a river. A few have started from injury. In most the cause is untraceable.

Charcot gives the diagnosis of Morvan's disease from sclerodermia of the hand and anesthetic leprous deformity of the hand, but the other symptoms of those maladies would be present, so that mistakes could seldom arise except from paying too exclusive attention to the hand lesions. Rendu * met with a case from Tongking with the special dissociation of sensory symptoms of syringomyelia, which Charcot, Leloir, and Hallopeau considered to be anesthetic leprosy, the patient having thickening of the ulnar nerve and paralysis of the orbiculares palpebrarum, as well as trophic troubles of the lower limbs.

There are, therefore, some cases in which the diagnosis is difficult, and it is now established that syringomyelia with its characteristic spinal cavities may occur in the course of leprosy, as may also analgesic whitlows and mutilation, anesthesia, vaso-motor, and trophic disturbances. Zambaco, who has had long experience of leprosy in Constantinople, struck by these resemblances, went to Brittany, where Morvan observed his cases, and came to the conclusion that leprosy was not dead there, and that syringomyelia and Morvan's disease were only forms of leprosy modified by climate, hygiene, and environ-

* Jeanselme records a case of Morvan's disease in a leper, *loc. cit.*, *Fr. Soc. Derm.*, *Ann. de Derm. et de Syph.*, vol. ii. (1891) p. 409.

ment. This startling theory was considerably weakened by his further contention that, "Sclerodermia, sclerodactylia, morphea, ainhum, are all modified forms of leprosy"; and further, that cases of leprosy have been included under Raynaud's disease and the progressive muscular atrophy of Duchenne. Zambaco has found a few supporters, such as Falcao of Lisbon and Coli of Columbia, but most people consider that the Pacha has proved too much, and that similarity of symptoms and even of pathological changes does not necessarily imply the same pathogenic agent.

The prognosis is not good, and treatment can only be palliative.

AINHUM.*

(The Nagos native name, meaning "to saw.")

Definition.—An endemic disease, in which spontaneous amputation of the little toe occurs.

This disease occurs only in negroes and Hindoos and other dark-skinned races.

It is not uncommon on the Gold Coast and other parts of the west coast of Africa, and in Brazil, and is also to be met with in the West Indies, West Virginia, North Carolina, India, and the islands of Polynesia, Nossi-Bé, Réunion, and Madagascar. It was first described by Clarke as "a dry gangrene of the little toe among the natives of the Gold Coast," and independently years later by Da Silva Lima of Bahia, who collected fifty cases.

* *Literature.*—Clarke, *Trans. Epidem. Soc.*, 1860, vol. i. p. 105. "On Aínhum," by Da Silva Lima, *Amer. Arch. of Derm.*, 1880, vol. vi, p. 367—one of the best accounts of the disease. See also Hirsch's "Geographical and Historical Pathology," *New Sydenham Soc*, 1886, vol. iii. p. 728, containing bibliography. Duhring, *Amer. Jour. Med. Sci.*, January, 1884, with microscopical examination by H. Wile. "The Histology of Ainhum," by C. H. Eyles, *Lancet*, September 25, 1886. *Path. Soc. Trans.*, vols. xviii., xix., and xxxii. (1881), p. 302; and Fox and Farquhar's "Endemic Skin Diseases of India," etc., App. vii. p. 114. "Ainhum," by Walter Pyle of Washington, *Medical News*, January 26, 1895, gives a full bibliography. "Contribution nouvelle à l'étude de la question de l'Ainhum," par H. de Brun, de Beyrouth, *Annales de Derm., etc.*, vol. x. (1899), p. 325, with skiagram.

Symptoms.—The disease is a purely local one, and begins as a semicircular furrow in the digito-plantar fold of the fifth toe, starting from the inner and under surface, without inflammatory or subjective symptoms, except perhaps itching, preceding or accompanying it; nor is there at first any breach of surface or interference with the movements or sensibility. The furrow extends very slowly in depth, and towards the upper surface, eventually completing the circle and forming a groove all round, as if from constriction by a ligature, and with the same result, the portion beyond the constriction swelling up to two or three times the normal size and becoming separated from the rest, with the top part rotated outwards. While the constriction deepens the tissues atrophy beneath, so that the toe is like a roundish tumor with a narrow, flexible pedicle, which at this stage is likely to ulcerate, with fetid discharge and severe pain, until the now useless member is removed, either by the occurrence of gangrene, an accidental wrench, or being cut off by the surgeon or the patient himself, which he can easily do with little pain or bleeding. All this process is very slow, taking from four to ten years for the toe to be ready for removal, but fifteen (Moreira) and fifty (Evans *) have been recorded.

Mr. Johnson Smith was kind enough to show me at the Seamen's Hospital, Greenwich, the only living case that had, up to then, visited England. The patient was a stalwart negro sailor, æt. thirty-eight, from Jamaica, and he had noticed the disease for seven months. Unlike most cases, pain was the first symptom. This had persisted ever since, slight in the daytime, but severe at night, quite preventing sleep, and he therefore wished the toe removed. There was no ulceration; but in the plantar fold, opposite the metatarso-phalangeal joint, the epidermis was much thickened, and on the inner side was a sulcus like a deep cut. On the upper surface the furrow was shallow, but broader, and on the outer side what appeared to be a corn leveled up the sulcus. It is noteworthy that in Shepherd's case the disease began as a small pimple on the outer side of the toe. Not infrequently the fifth or the fourth toe on the other foot, or the fourth and fifth of the same foot, or even the great toe (Crawford and Cooper), are also attacked simultaneously or successively, and Béranger-Ferraud has seen all the toes amputated,

* Evans, *Trans. South Carolina Med. Assoc.*, 1897, p. 93.

and in one case all the toes of the right foot were lost and the disease began in the middle third of the leg. The metatarso-phalangeal joint has been affected in a few cases, and Eyles once saw it affecting a finger, but nine times out of ten it is confined to one or both little toes.

Etiology.—It occurs chiefly in adults who are young or in the prime of life (thirty to thirty-five), rarely in old age, and hardly ever under fifteen years; Le Brun's case was six years old. It affects the male sex much more than the female, and is said to be sometimes hereditary (Da Silva Lima, Duhring, Dupouy), but this has not been proved and is *a priori* improbable. These facts, and its restriction to the dark races * and to certain localities, are all we know of the causation of the disease. Some authors ascribe it to injuries resulting from the negroes walking barefooted. This is disputed, however, because freed negroes who wear shoes are also affected, but it is notorious that they take them off whenever they can. Their flat-footedness is supposed to explain the fact that the fourth and fifth toes are the ones affected. It has also been attributed to wearing rings on the fifth toe, but it occurs in races which do not wear rings.

Pathology.—Nothing is known of its pathology; but its histology has been many times investigated. According to Eyles, one of the most recent observers, there is hyperplasia of the epidermis, especially of the horny layers, and downgrowth of the interpapillary processes. In the corium there is great increase of fibrous tissue and fat; in the vessels, and in the larger arteries, there is great increase of the adventitia, the middle coat is but little altered, while the intima in most of the vessels is much thickened, so as to encroach upon, and even fill up, the lumen, *i. e.*, there is endarteritis obliterans. In the bones the condition is one of "rarefying osteitis." Still later Moreira † of Bahia finds a chronic inflammation of the upper layer of the cutis, and a fibrous hypertrophy of the collagen tissue in the area of the furrow. He found no leprosy bacilli or other micro-organisms. The bone tissue is gradually absorbed, and is re-

* Cases of ainhum in Europeans have been reported by Mirault, Fiontan, and others, but they are not accepted as genuine cases.

† J. Moreira, *Monatsh. f. prak. Derm.*, xxx., No. 8, p. 361, with three figures. Abs. *Brit. Jour. Derm.*, vol. xii. (1900), p. 334. Clinical details of nineteen cases. The histology was done in Unna's laboratory.

placed by fibrous tissue. Other authors describe the conversion of the soft tissues and bone into a uniform fatty mass. The line of the division may occur either through the middle of the proximal phalanx, or at the proximal inter-phalangeal joint (Crombie).

Zambaco's view that it is a modified leprosy was put forward in 1867 by Collas, but is scarcely worth discussion.

Manson suggests that it is due to frequently repeated irritation from injuries in walking barefooted, setting up fibrous changes to which the negro race are especially liable, *e. g.*, their proneness to keloid.

Treatment.—Da Silva Lima found that at the commencement division of the contracting band by incision at right angles to its course cured the disease. Murray of Trinidad confirms this. At the later stage there is nothing to be done but to amputate the toe as soon as it becomes painful or troublesome.

Proust * has endeavored to show that ainhum is pathologically identical with congenital amputation, but this view is not accepted.

**Gazette des Hôpitaux*, April 4, 1889. See also the refutation by Trélat, *Gaz. Hebd. de Méd. et de Chir.*, February 28 and March 7, 1891, pp. 102, 113, and abs. in the *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 614.

CLASS VII.

NEUROSES—SENSORY DISEASES.

NEUROSES CUTANEÆ.

As a matter of practical convenience the neuroses of the skin are restricted to disturbances of its sensory innervation, the symptoms of which are entirely subjective, the changes being functional only; any visible effects, such as may be due to scratching, are secondary or accidental.

These affections come under excess or diminution of sensibility, *i. e.*, hyperesthesia, dermatalgia, pruritus, and anesthesia.

HYPERESTHESIA.

Exalted sensibility of the skin may be idiopathic or symptomatic; practically nearly all cases are symptomatic. It may be general or local, perhaps restricted to one nerve domain, symmetrical or unilateral, and due to functional or organic disease of the nerve centers, trunks, or peripheral terminations, and of an irritative rather than of a paralytic kind. The chief cause with which dermatologists have to do is hysteria, and even then it is only one of many phenomena attending that condition. It is present in a slight degree in some cases of urticaria factitia; at the onset of non-tuberculated leprosy, generally in the course of the ulnar or sciatic nerves; and in neuroma cutis. The surface may be so sensitive that the slightest touch even of the clothes is painful; and changes of temperature, or a mere breath of air, produce more or less discomfort, and in hydrophobia, a characteristic and painful spasm. Its duration depends upon its cause; in hysteria, for example, it may shift its position from one side to the other, and come and go in an inexplicable manner. There are, however, a few cases in which there is no apparent cause, and these are classed as idiopathic.

For the paresthesiæ of various kinds met with as a symp-

tom of many nervous diseases, central and peripheral, works on neurology should be consulted.

DERMATALGIA.

Synonyms.—Neuralgia of the skin; Rheumatism of the skin; *Fr.*, Dermalgie; *Ger.*, Nervenschmerz der Haut.

Definition.—Pain in the skin, not consequent upon structural change in it.

Piorry, Beau, and Axenfeld have specially studied this condition. While in a few cases it appears to be primary, more frequently it is due to some organic disease of the nerve centers, especially locomotor ataxy.

In a considerable number of cases there is a history of rheumatism, as was first pointed out by Beau, and exposure to cold has been the direct exciting cause. Chlorosis has been present in some cases, and hysteria in many, while in others there has been no defect in health. Organic disease of the sensory centers, or paths, in the brain and cord are responsible for nearly all the rest.

It is usually strictly and limitedly local, but may be general, and it is more common in hairy parts and in women. There is nothing to be seen; there is simply spontaneous pain, constant or intermittent, and of all grades of severity; it is of a superficial character, and accompanied by more or less hyperesthesia, though firm pressure will sometimes relieve it; burning, pricking, shooting, or boring sensations have been met with by Duhring, and the pain is generally worse at night. The disease may last for an indefinite time, and even when apparently well is liable to relapse.

This condition is distinguished from mere hyperesthesia by the pain being spontaneous, as well as easily excited, and more limited in area as a rule, and it is distinguished from ordinary neuralgia by its being superficial, and accompanied by hyperesthesia.

Causalgia, or the burning sensation symptomatic of the glossy skin, is an allied condition.

Erythromelalgia. This was first described by Graves, and independently by Weir Mitchell in 1872, who gave it the above

name, which means "red neuralgia." The leading symptoms are shooting, throbbing, and burning pains, more or less constant, with exacerbations of severity, especially when the foot is dependent, or on pressure, hyperalgesia being always present. The pain also is greater in hot than in cold weather. There is in addition a patchy redness when the limb hangs down, which is absent when it has been raised up for some time. Hyperidrosis also is usually present. The lower limb, especially the foot, is chiefly affected, but the lower segments of the upper limb may also be involved, and it has attacked the face. It is now known that the condition is symptomatic of many forms of brain and cord disease, such as disseminated sclerosis, tabes dorsalis, neurasthenia, and myelitis. Pospelow's case was associated with Morvan's disease. It may also be due to peripheral neuritis. It is probably an angio-neurosis. In a woman of forty-nine, in whom these symptoms had been present a year, in consequence of prolonged worry, the pinky redness was limited to the outer border and anterior two-thirds of the right sole. The first symptoms were terrible itching, followed by pricking, shooting, and burning, constant, but with exacerbations several times a day. She found some relief by soaking her foot in hot water, as it was dry and not moist as usual. Regarding it as peripheral, I ordered phenacetin gr. v. three times a day, which gave marked relief, especially to the burning, which was quite subdued. Most cases differ from the above in being aggravated by warmth. Morel-Lavallée's case lasted twenty-two years, the hands were affected with intense burning, and there was a slight degree of Raynaud's disease, an associated condition which has been met with several times. In a case of Elsner's gangrene extended to the foot. Weir Mitchell and Spiller in one case found intense degeneration of the peripheral nerves of the great toe, and thickening of the coats of the arteries and contraction of their lumen. In this and another case amputation of the part first affected gave relief. In a case of Elsner's erythromelalgia had existed in the left index from the age of sixteen. After twenty-three years of intense suffering the finger became gangrenous and was amputated and she was cured. He thought this disease could not be separated from Raynaud's.

Treatment of the other forms of dermatalgia must depend

upon the cause. Where no disease of the nerve centers or other definite reason can be found rheumatism is the probable source of the mischief; salicylate of soda or quinine may be tried, with vapor or Turkish baths, if it is widespread; but shampooing could scarcely be borne in the more localized forms. Beau recommends that the part should be blistered, but the better plan is to blister or apply a mustard leaf over the center from which emanates the nerve supply to the affected part. In all peripheral pain phenacetin and antipyrin are worth trying. The application of the menthol cone to the part would probably give temporary relief. In many cases the pain subsides spontaneously in a few weeks.

PRURITUS.

Definition.—A functional defect of innervation, in which itching is the only direct symptom.

Much confusion arises from the terms prurigo and pruritus being frequently used as if they were synonymous. Here pruritus is used, not in reference to it as a symptom of a large number of skin diseases, such as eczema, urticaria, etc., but for those conditions in which the subjective sensation of itching is the sole symptom of the disease, though there may be secondary lesions where the scratching has been very energetic, the signs of which have already been described under "The Scratched Skin" (p. 42). In the greater proportion of cases of general pruritus, although the itching is considerable, the secondary manifestations are absent, the skin appearing quite normal. In the majority itching is complained of, but sometimes tingling, formication, or other modification of the sensation is described by the sufferer, and while, in some cases, it is only a trifling inconvenience, in others it produces profound misery, less endurable almost than pain, and inducing such depression of mind as to result even in insanity. Bronson * argues

* "The Sensation of Itching," by E. B. Bronson, *New York Medical Record*, October 18, 1890, and Reprint Syd. Soc. Selected Monographs in Dermatology, 1893. "The Pathology and Treatment of Pruritus." A Discussion at Annual Meeting of *Brit. Med. Assoc.*, 1895, by McCall Anderson, Brooke, etc., *Brit. Jour. Derm.*, vol. vii. (1895) p. 291.

that there is a special sense of contact apart from that of ordinary touch, and that pruritus is the result of disturbance of this sense of contact.

Symptoms.—Pruritus may be general or local. In the general cases, **Pruritus Universalis,** the itching is not present all over the body at the same moment, but now one, now another part itches, and no sooner is it better in one place than it is worse in another. There are, however, great variations in duration; sometimes it is practically constant, at others there may be intervals of relief, but all cases are worse at night, where it pursues the patient even into his dreams, giving them what may be called a pruritic impress.

Exposure, either to heat or cold, will generally excite it.

In the local forms, although any part may be attacked, the genitalia and anus are the favorite regions, and hence we meet with the terms P. vulvæ, scroti, and ani, as if they were special diseases; but the scalp and face are not very uncommon positions, and in the latter it is felt chiefly about the nose and mouth.

Occasionally the pruritis is localized to the palms and soles, or to the course of a nerve—*e. g.*, I have met with an instance in an elderly woman in whom the pruritus was limited to the distribution of the sciatic, which was speedily relieved by the application of mustard leaves over the hip.

In **P. Vulvæ** the itching may affect the labia, vagina, and clitoris, individually or collectively, and is, in some cases, so constant and severe as to quite unfit the patient for all social duties, and it becomes, therefore, a very serious affection.

In man the **scrotum** is the part most frequently affected, but the perineum and even the anus are often involved also; in a few cases the orifice of the urethra is the part attacked.

Pruritus Ani is a very common affection in both sexes and at all ages, and is often so intense as to goad the patient to the most violent scratching; consequently, excoriations and more or less eczema and thickening are very frequent concomitants both of vulvar and anal pruritus, and bring their own aggravation. The itching may be confined to the outside, or affect the inside also. Epithelioma may be developed from long-continued scratching.

Etiology.—This is very important, as the success of the treatment depends upon its correct determination.

General pruritus in the aged **(P. Senilis)** is a symptom often accompanying senile degenerative changes in the skin, and is sometimes especially intense in the "senile warts" previously described. Probably the dryness of the senile skin is a predisposing cause, and in many persons who have naturally what is called an itchy skin there is a congenitally dry skin. In old people defective elimination from kidney and other degenerations plays an important part, and the cause may really be degeneration of the nerve-ends in some instances. In adults generally, always excluding such conditions as urticaria, pediculosis, and scabies, the most common cause is hepatic derangement, whether functional, as seen in the lithemia of Murchison, or organic, especially after ordinary jaundice, in which, independent of the cause, the itching is often very severe and persistent, though it seldom comes on before the jaundice has been present for some time or is declining. The next most frequent causes are disorders of the alimentary canal, such as dyspepsia, with or without constipation, "the gouty state," kidney diseases, such as albuminuria, chronic Bright's disease, and diabetes mellitus. Ovarian and uterine disorders, and pregnancy sometimes originate it. In the last, when it has once been present, it is very likely to recur at any subsequent pregnancy.

Depressing mental influences play a certain part in the etiology, and under this head may be included those cases in which the patients, generally of the better classes, have suffered, or imagine, on more or less good grounds, that they have suffered, from scabies or pediculosis, but whom nothing will persuade that they are still not infected, however long and effectually they may have been treated. Such cases of what might be called "pruritus mentis" are often on the borderland of insanity, and may end in actual melancholia.

P. Palmæ et Plantæ is rare; it may occur either with or without hyperidrosis. Many of the patients are gouty; in women it is occasionally seen in association with uterine disorders. Some drugs and foods would sometimes produce itching in some persons with special idiosyncrasy. Season has a certain influence in some cases; some patients suffer from itching in summer only (*P. æstivalis*); others in winter (*P. hiemalis*), on

which Duhring * and Corlett † in America, Hutchinson in England, Obersteiner in Austria, and Dubreuilh ‡ in France, have written papers. They consider it a distinct affection; it may be general, but usually is confined to the lower extremities. I have met with a few instances. One patient, a plumber, æt. twenty-nine, had suffered every winter for six years, the pruritus being general, lasting as long as the cold weather. There were no objective signs, and no evidence of lead-poisoning or gout, except that his urine was frequently loaded with lithates. Sulphur baths gave him most relief, but internal medication had but little effect. In another case it had existed from boyhood, though his skin was moist. In children itching of the thighs and legs is often experienced in cold weather. The skin is slightly red and rough. The affection is really a slight eczema. Xerodermatous children are especially liable to it.

Local Pruritus is often dependent on a local cause. Pruritus vulvæ in children is generally due to ascarides in the rectum, and sometimes in the vagina itself. Other causes of irritation of the lower bowel, such as catarrh, scybala, etc., may also produce it. In adults it may be due to uterine or ovarian derangements, functional or organic, or be a concomitant of vaginitis and urethritis, and is often present only at, or much aggravated just before or during, the periods; but it is still more frequently present as one of the neuroses to which women are liable at the climacteric age. Diabetes mellitus is a frequent cause, chiefly in middle life, but in all cases the urine should be tested, eczema vulvæ being then invariably present also; indeed in all cases eczema is a cause or consequence. Sometimes pruritus vulvæ has developed on pruritus ani, and is then due to the same cause as that affection.

Pruritus ani in an adult is in nearly all cases due to hepatic derangement, and the hemorrhoids which are so frequently present are the consequence of this derangement and at the same time produce local aggravation of the itching; the same may be said of constipation and fissures. Decomposition of the sweat in those who perspire freely is another source of irritation.

* Duhring, *Phil. Med. Times*, January 10, 1874.

† W. F. Corlett, "A Clinical Study of Pruritus Hiemalis," *Amer. Jour. Cut. Dis.*, vol. ix. (1891), p. 41.

‡ Dubreuilh, "Prurigo hivernal," *Jour. de Méd. de Bordeaux*, February 8 and 15, 1891.

In gouty people pruritus ani is often one of their first warnings that they are going wrong. Both P. ani and of the pudenda in both sexes may also be due to pelvic tumors obstructing more or less the pelvic veins and inducing, therefore, a local congestion.

In children ascarides in the rectum, or tapeworm, or lumbrici higher up, or mere catarrh of the intestinal canal may be the causes of anal or nasal itching, as may often be observed in rickets.

Pruritus Scroti and of the pudenda generally in men is not common, except as the result of eczema, which is not necessarily very pronounced.

Itching at the end of the penis may be caused by stone or other irritant at the neck of the bladder.

Pathology.—As already intimated the disease is a sensory neurosis, due to a direct or reflex irritation of any part of the nervous system, from the center to the periphery of the part affected, and not accompanied by any appreciable lesion of the skin nerves, but the presence of epithelium appears to be essential, as in the familiar instance of wounds which do not itch until epithelium appears.

Diagnosis.—This resolves itself into the diagnosis of the causes of the itching, and familiarity with the etiology is therefore essential. As a matter of practice, when a patient complains of general pruritus, the first thing to do is to exclude parasitic irritation, whether of bugs, fleas, gnats, lice, the itch acarus, or harvest bug, etc.; nine times out of ten, however, the parasite is the pediculus in an elderly person, or the scabies acarus at any age. The position of the scratch marks will go a long way towards deciding this; if they are about the shoulders to any extent, there is a strong presumption in favor of *pediculosis;* if about the hands or wrists, of *scabies.* The other points of diagnosis of these diseases are described under their respective heads. The next most common disease is *urticaria,* and unless the patient is a child there will very probably be no objective symptoms at the time of examination; the patient's answer to the question as to whether he "comes out in bumps as if stung with a nettle" will settle this point, though it has still to be determined whether the urticaria is the primary cause of the itching, or only the consequence of the scratching. These

three diseases being excluded—and it is only in one or other of them that the so-called "pruritic rash" is very marked—investigations into the presence of any *hepatic*, *digestive*, or *renal* disorder must be successively investigated, the urine in all cases is to be tested, and but few cases will remain that are not referable to one or other of these systems. If the patient is advanced in years, and every other source of itching can be excluded, then, and not till then, the diagnosis of *senile pruritus* remains as a refuge, but it must be borne in mind that there may be defective elimination without the physical signs of albuminuria, etc. When the pruritus is local a careful examination of the part must be made, to exclude any objective source of irritation, and the various causes enumerated under etiology reviewed, until the right one is found, or at least till driven to confess ignorance, after the most careful investigation has failed to reveal the *fons et origo mali*.

Prognosis.—This is good or bad according to the success or failure in finding the cause, and the possibility of reaching or obviating it.

Treatment.—This again depends upon the cause, and unless it has been discovered success is not very likely to attend aimless therapeutic efforts. The internal treatment is both dietetic and medicinal, directed to the removal of any hepatic, digestive, renal, or uterine disorders that may be discovered.

The diet should be bland and easily digestible; alcohol should be very sparingly taken, and is often best avoided altogether, and all condiments and sauces should be forbidden.

The bowels in all cases must be carefully regulated; saline aperients are often required at first, and afterwards the bowels must be kept regular by extract of cascara sagrada, the compound liquorice powder, or other suitable laxative; as a rule, aloes should be avoided where the pruritus affects the anus or pudenda. Alkalies, especially bicarbonate and salicylate of sodium or of potassium, are generally required for icteric and other hepatic derangements; but it is unnecessary to go into further details, as the internal treatment is in accordance with the general principles of medicine in the treatment of the various disorders, and success seldom fails to attend judicious and persevering efforts in the several directions indicated. There is, however, one empirical remedy that is sometimes of service,

when either the cause is of an organic and irremovable kind, or where it cannot be ascertained. This is cannabis indica, first suggested by Bulkley for senile pruritus; five minims of the tincture are enough to begin with, but the dose generally requires to be increased up to twenty or thirty minims three times a day, well diluted, and after meals, or it will upset digestion; marked relief is generally experienced, and often complete cure, unless the original cause is still in active operation. It appears to act by diminishing cutaneous sensibility, and in a certain proportion of cases has acted very satisfactorily in my hands. He also recommends tr. gelsemii in ten minim doses, repeated every half hour until ʒj has been administered, unless toxic effects show themselves. Hutchinson advocates vinum antim. tart., ♏v ter die in senile pruritus. I have known it relieve one case.

Wannemacker has found lactophen fifteen grains three times a day relieve severe pruritus, but he is not able to point out when it is especially indicated. Hypodermic injection of one-tenth to one-third of a grain of pilocarpin is said to give as much as a day's relief from the pruritus of jaundice, though there may be a transitory aggravation. Antipyrin and phenacetin are also sometimes successful, but all these empirical remedies are a confession of failure to ascertain or to eliminate the true cause of the pruritus. Whether the itching be general or local, especially of the anus, in some obstinate cases much benefit will be derived at an alkaline spa, such as Ems, Vichy, Contrexéville, or Harrogate; or where there is a necessity for laxatives, Carlsbad or Marienbad. The thorough flushing by large quantities of weak alkaline waters is often most efficacious.

External treatment is always of value, and even when it does not affect the cause of the itching, by giving temporary relief it enables the patient to abstain from scratching, and this gives the irritated nerve filaments a chance of settling down, while internal or other radical measures are being directed to the origin of their trouble. For general pruritus lotions of various kinds are of service—at all events, for a time. The majority of them are of the disinfecting class, and it is always desirable to change them from time to time, if only to satisfy the mind of the patient, the mental attitude exercising an important influ-

ence on the result. One of the best is the liq. carbonis detergentis ℥ij to aquæ ℥viij, or the liq. picis alkalinus, in the same proportion, is almost equally good, or lysol ℥iss to ℥viij; others are terebene ℥j to ℥viij; sanitas 1 part to 2 or 4 of water; carbolic acid 1 in 60; benzoic acid ℥ij, aq. ℥viij; thymol ℥ij, liq. potass. ℥j, glycerin ℥iij, aq. ℥viij, this is a very good lotion; salicylic acid ℥ij, sod. bibor. ℥j, glycerin *q. s.*, mix the acid and borax with ℥iv of glycerin, heat gently until dissolved, then add glycerin to make up ℥j; this can then be diluted with glycerin, alcohol, and water to any extent, ℥j of the first compound, ℥j of alcohol, and water to ℥viij, is a good proportion; it has the advantage of being free from smell, which is a drawback in the use of most of the others. Perchlorid of mercury gr. 1-2 to gr. 3 to ℥j of water is another good odorless lotion. Camphor chloral (equal parts of each constituent) gave great relief in a case of senile pruritus where the warts were the site of the itching; it may also be used diluted, by applying with a sponge to the itching surface. As a rule, lotions for senile pruritus should contain spirit, about one-quarter of spiritus rosmarini, eau de Cologne, or plain spirit, being added to one or other of the above anti-pruritic lotions, the evaporation and consequent cooling of the skin giving great relief. For this reason menthol gr. 2 to gr. 10 to the ℥j of water relieves this and other forms of pruritus. Chloroform ℥j, glycerin ℥iv, water ℥viij; sodii sulphidi ℥ij, glycerin ℥ss, water ℥viij; potassii cyanidi ℥j to water Oj, are other formulæ recommended on good authority. Baths are often very beneficial: alkaline with or without starch, bran, or gelatin, and sulphid of potassium, or the sulphaqua salts, are most frequently successful (see Appendix for formulæ). Vapor and Turkish baths are worth trying.

Static electricity was strongly recommended by Leloir for pruritus both general and local, the latter especially. The patient is placed on an insulated stool, and is connected with one pole of a Wimshurst machine. The other pole with a metallic terminal is brought to four inches from the affected part. A brush discharge ensues which he says is not painful. The constant current has also been used in vulvar pruritus. Quite recently the high-frequency currents have been said to give speedy relief to local itching.

For local pruritus special remedies are generally necessary;

the number recommended as always giving relief testifies to the obstinate resistance to medication frequently offered.

Pruritus Scroti is often best relieved by painting on argentic nitrate gr. 10, sp. ætheris nitrosi ℥j. The unguentum hyd. ammon. gr. 10 or 20 to ℥j is often useful here also. Boric acid lotions are good in many cases. Bulkley's plan, as set forth for eczema scroti, gives several hours' relief; water, as hot as can be borne, being applied for five minutes at a time.

Bronson's oil for local itching is liquor potassæ ʒij, acidi carbolici ʒiv, ol. lini ad ℥ij, ol. bergamot ♏x.

For *Pruritus Vulvæ* strong lead lotion, ʒij or ʒiv to ℥viij, is a good one; or nitrate of silver gr. 5 to 10 to ℥j of nitrous ether is one of the best applications; the stronger lotions are used at intervals of a couple of days, but they stain both skin and linen. A saturated solution of boric acid answers well in many cases; Neale thinks it one of the best remedies. Pixene is strongly recommended by Locke, ʒij to ℥vj of water with ℥ss of glycerin; but the best of all, in my opinion, is the plan recommended by Reeves, the compound tincture of benzoin, B. P., painted on with a camel's-hair brush every night. Where there is thickening multiple scarification may be useful, and Unna recommends linear scarification with his micro-cautery.

P. Ani.—Many mercurial ointments give immense relief for the time being. Ammoniated mercury gr. 20 to ℥j of benzoated lard is a favorite of mine. The yellow oxid of the same strength is often useful, and calomel gr. 10 to ʒss to ℥j is another good one; some combine with these carbolic acid gr. 10, creasote ♏xv, or camphor ʒss. The oleate of mercury, 1 or 2 per cent. with or without oleate of morphia, is often beneficial, but stronger applications must be used with caution; the diluted nitrate is another good application. Peruvian balsam, rubbed up with a little vaselin, is often successful. Sometimes benzoated oxid of zinc ointment, B. P., is better than anything if applied with strong pressure so as to temporarily empty the dilated veins. It should always be by the bedside to apply in mitigation of damages when the patient has yielded to the temptation to scratch. Ichthyol as a 5 per cent. lotion or a 10 per cent. ointment or soap has many friends.

Morris strongly recommended cocain as successful in one obstinate case, and others have spoken well of it, but it has not

helped me much. It would be most likely to succeed when a starting point of the pruritus can be localized. Extract of belladonna gr. 1-2 to gr. 1, in the form of suppository at bedtime, often enables a patient to get off to sleep before the torment comes on; morphia may be added, or given alone. In all cases, especially in those who perspire freely, ablutions with carbolic acid 1 in 60, saturated solutions of boric acid, and 1 in 4000 perchlorid of mercury, lysol ʒiss to ʒviij, or with permanganate of potash lotion, are necessary, and of themselves often give relief. If there are external piles, the old unguentum gallæ is often useful for both the piles and pruritus, but painting with hazeline or injections of it are better. These are a few only of many local remedies, but though all are more or less temporarily useful, the mercurial ones are generally the most successful; but permanent relief is only to be obtained by the treatment suitable for the etiological factor.

The mineral spas of Contrexéville and Ems, or, if aperients are required, Carlsbad and Marienbad, are often of signal service in pruritus ani.

In spite of this extensive armamentarium successful treatment is often very difficult, though few cases are absolutely incurable.

ANESTHESIA.

This affection comes under the notice of the neurologist more than that of the dermatologist.

There are all grades of it, from only slight diminution of sensibility up to complete loss of sensation to the strongest impressions. It may be general or local, unilateral or symmetrical, hemiplegic or paraplegic, limited to a single nerve domain or affecting several; there may also be analgesia, without loss of tactile sensibility, as in syringomyelia, or intense pain with loss of ordinary sensibility (anesthesia dolorosa of Romberg), or both may be absent together. Like the other sensory neuroses it is chiefly interesting from an etiological point of view. It may be idiopathic or symptomatic, and dependent on internal or external causes. The internal causes are either in the sensory nerve centers, or at some point where the sensory path from the periphery to the center is interrupted,

e. g., unilateral lesions of the brain surface or the parts adjacent, locomotor ataxy, traumatic disease of the nerves, syphilis, leprosy, or tumors pressing on a nerve trunk. In leprosy the function may be disturbed by either nerve trunk lesions or peripheral clogging, so to speak, with leprous infiltration.

Hysterical anesthesia is not uncommon, and is unilateral, but not always on the same side, changing about under mental influences in the most extraordinary way. Of external causes, cold, however applied, carbolic acid, caustics, cocain, chloroform, aconite, pressure on a nerve, *e. g.*, the ulnar, are the most common; while of drugs given internally, chloroform, ether, nitrous oxid, and other anesthetics, cannabis indica, alcohol in excess, lead, and opium may be mentioned.

The *treatment* entirely depends upon the cause and its amenability to medical measures.

CLASS VIII.

NEOPLASMATA—NEW GROWTHS.

This is a large, important, and somewhat heterogeneous group, of which the main feature is a growth or infiltration of new elements in the skin. It may be subdivided into:

1. Degenerative neoplasms, or such as are characterized by the presence of marked degenerative changes, comprising molluscum contagiosum, colloid of the skin, and xanthoma.

2. Infiltrative, in which the neoplasm consists chiefly of infiltration of granulation cells in the cutis, comprising such diseases as tuberculosis, syphilis, lepra, and rhinoscleroma. They are all of schizomycetic origin, though the organism of syphilis has not yet been identified. It is probable that Kaposi's idiopathic pigmented sarcoma really belongs to this section.

3. Tumors of benign nature, such as keloid and fibroma affecting the connective tissue; neuromata involving the nerve tissue; myomata, the muscle tissue; nævus vascularis and telangiectasis, the blood-vessels; lymphangiectodes and lymphangioma, the lymphatics; and to these moles may be added, as, like most of the others, they are of congenital origin.

4. Tumors more or less maligannt in their characters and course, comprising carcinoma, epithelioma, rodent ulcer, Paget's disease of the nipple, sarcoma, leukemia, and pseudo-leukemia cutis.

5. Fungating granulomata, including mycosis fungoides, yaws, verruga peruana, furunculus orientalis, ulcus inguinale tropicum, granuloma pyogenicum. Several of these are contagious, and all except mycosis fungoides are certainly of microbic origin, and that disease also is probably due to an organism either directly or indirectly.

MOLLUSCUM CONTAGIOSUM.*

Deriv.—Molluscum, a mollusc, from *mollis*, soft.

Synonyms.—Molluscum sebaceum; Molluscum sessile; *Fr.*, Acné varioliforme (Bazin); Molluscum verrucosum (Kaposi).

Definition.—Small sessile or pedunculated, glandlike tumors of a pearly white or pinkish color, which are formed in the rete.

This disease is not very common in England, and it appears to be quite rare on the Continent and in America, though it is doubtless more common than dermatologists' statistics suggest, 2 in 1000 in my practice. It is common about the genitalia of prostitutes and of those who cohabit with them, and is very likely to be aggregated into masses on the thighs.

Symptoms.—The tumors are nearly always multiple, varying in number from two or three up to many scores, and in size from a small pin's head to a large pea, the average being one-eighth of an inch. They are of firm consistence, nearly hemispherical in shape, but flattened on the top and usually umbilicated, while in the larger ones there is a small central hole, leading to the interior of the tumor, through which milky fluid or a solid waxy mass may be expressed. At first they are sessile, pearly, or waxy-looking, but as they grow larger the contents become more opaque and yellowish, while the skin over them is of the normal hue unless from vessels coursing over them, and they may become more or less pedunculated. They are usually discrete, and the commonest positions are the face, neck, scalp, breasts, and genitalia. They may form anywhere, but are very rare on the palms and soles.† They begin as only just perceptible elevations above the skin, grow slowly, and after attaining to their full size may remain unaltered for a long time, or they may inflame, suppurate, discharge their contents, and disappear, perhaps without leaving even a scar.

Hutchinson says that in a month or two they disappear

* Author's Atlas, Plate LVII., Figs. 1 and 2; the last shows a suppurating tumor. Sydenham Society's Atlas, Plate XLVI., on face and breast. Kaposi's Hand Atlas, Plate 226, on the penis and scrotum. St. Louis Atlas, Plate XLII., on the vulva.

† Balzer and Alquier record a case on the sole. *Annales de Derm.*, vol. i. (1900), p. 528.

spontaneously, but this much understates the duration. (*Vide* Prognosis.)

Variations.—A few cases of **molluscum giganteum** are recorded by Hebra, Virchow, Laache,* Walter Smith,† and E. Wilson respectively. In Laache's case the tumor was single, grew from the occipital region, and was the size of two fists; but the microscope proved that it was a molluscum contagiosum. Confluent molluscum without much elevation is rather more common. In a case of Hallopeau's there were plaques on the back of the left calf, the largest two inches by one and a half, but raised up only one-eighth inch.‡ C. Fox showed a case to the Dermatological Society in May, 1902, an elderly woman; on the right temple was a cribriform mass formed by aggregation of tumors, each about the size of a hazel nut. There were some of the usual size and character near and in other parts, but some of the larger tumors had no central orifice, and had vessels coursing over them, so that by themselves they would not be recognizable. White opaque fluid could be squeezed out of those with an orifice. Another form that I have seen is the very opposite of this; on the back of the wrists and over the knuckles of the left hand, in a woman, æt. eighteen, were congeries of tumors from a pin's head to a hemp seed in size, the larger tumors being generally compound. They were distinctly raised above the surface, obtusely conical, with a flat top, of a violet hue due to dilated vessels at the periphery, while the central part was of a yellowish-white color, due to a friable plug, which could be squeezed out with moderate pressure, while the whole contents could be evacuated with strong pressure. In the compound tumors there were two or three plugs, while in the scattered ones, of which there were a few on the back of the right hand, and also upon the face and the angle of the mouth on the right side, there was only one such plug. A small piece of skin containing three small tumors was excised, and microscopical examination showed it to be of molluscous structure, with a

* Abstract in *Amer. Jour. of Cut. and Ven. Dis.*, February, 1885, p. 64.

† In W. Smith's case the tumors were very numerous and general, and one was three inches and a quarter by three inches. *Dub. Jour. of Med. Science*, November, 1878. He also quotes E. Wilson as having had a case where the tumor was three and a half inches in diameter.

‡ *Annales de Derm. et de Syph.*, vol. x. (1899), p. 134, quotes cases of Alibert, Vidal, and Kaposi.

single, flat, flask-shaped, acinus-like downgrowth of the rete, containing a plug of altered rete cells like molluscum bodies, while there was slight leukocytic infiltration in the corium round the tumor. Some of the growths were touched with the acid nitrate of mercury; a vertical incision was made into the rest and the contents squeezed out, and there was no return of them.

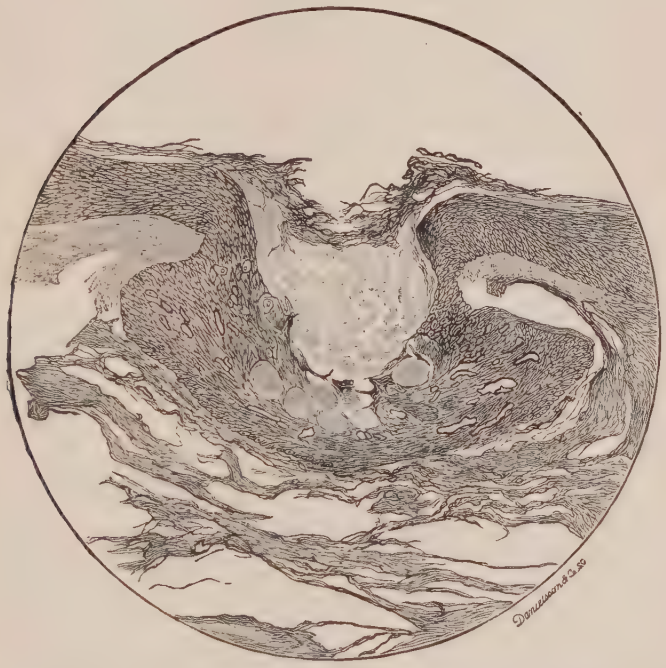


Fig. 34.—Peculiar form of molluscum contagiosum with a single acinus, formed from an outgrowth of the rete mucosum, with central plug of molluscous material.

A peculiar case, with many of the characters of molluscum contagiosum, but also with many differences, is recorded by Payne.* There were in the papules bodies structurally like psorosperms, but they were really altered epithelial cells.

Etiology.—They are much more common in children than in adults, in the poor than in the rich, and it is said, in females than in males. Most English authorities agree that the tumors

* *Brit. Jour. Derm.*, vol. iii. (1891). p. 250.

are contagious, while in Germany * and in America † the contagious theory is not so generally accepted. There are many cases where prolonged contact has apparently imparted the disease, *e. g.*, mollusca appearing on the face of the sucking infant and on the breast of the mother, and it is not a rare event to meet with several cases ‡ in the family. The failure to convey the disease by artificial inoculation does not prove that it is noncontagious, as many vegetable parasitic diseases, admittedly contagious, cannot be propagated at will; while Patterson, Retzius, Vidal,§ Stanziale, Pick, Haab, and Nobl have been successful in their inoculations, ‖ though with many failures. In Pick's two cases the first sign of the lesion took ten weeks to manifest itself, and Nobl's was nine weeks before they were distinctive.

Turkish baths ¶ are said to produce the disease, but they merely offer favorable conditions for the contagium.

Salzer ** records the case of a lady with molluscum contagiosum, in which it seemed probable that she had contracted it from pigeons which she was in the habit of feeding. The birds

* Caillaut relates that in a children's ward of thirty beds, fourteen were affected with this disease, which began from a single case ("On Diseases of the Skin in Children," second English edition, p. 78).

† Mittendorf of New York has reported two extensive outbreaks in asylums for children. Allen also records fifty cases in a children's asylum. Stelwagon and Graham have also reported outbreaks.

‡ See Duckworth's paper on cases favoring the contagious theory (*St. Bart.'s Reports*, 1868, p. 211).

§ Model 515 in the St. Louis Museum, showing a successful inoculation on an infant's arm.

‖ Stelwagon, *Jour. of Cut. and Gen.-Ur. Dis.*, vol. xiii. (1895), p. 50, "The Question of Contagiousness of Molluscum Contagiosum," gives full references.

¶ I have seen several such cases: one, a gentleman, had numerous mollusca on the nape and back of the poll, where it had been in contact with the wooden head-rest at the Turkish bath; in another, a lady, many scores of translucent pearly mollusca were scattered all over the back; she had lain on the felt-covered benches without any intervening cloth. In the third, a lady who took a Turkish bath every other day, but in her own house, the mollusca were numerous on the trunk and arms. The skin on and round the tumors was red, and they were pruritic. The source of infection was her own son, who said that many of his schoolfellows had similar "warts." Hutchinson says that all his male cases were frequenters of the Turkish baths; he suspects the towels or gloves.

** *Münch. med. Woch.*, September 8, 1896, p. 841. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 173.

died of an epidemic disease which produced emaciation with growths on the beak, said to be epithelioma contagiosum of fowls. Hutchinson has recorded a case in which a woman contracted the disease from her dog; in the latter it was proved microscopically. Shattock * has observed it in bunting.

Pathology.—It is now generally agreed that the lesions are derived from the prickle cell layer of the epidermis by the accumulation of altered epidermic cells, and the hyperplasia produced by the irritative presence of these cells or the original hypothetical infective organisms. The nature of the degenerative change which produces "the molluscum body" has been disputed hitherto. The idea that it was hyaline or colloid gained most support; but Charles J. White, the most recent observer (April, 1902), states positively that it is "normal keratin," thus confirming Piffard's observation that these bodies react to polarized light like corneous epithelioma. The change may start in the cells of the hair follicle as well as in the rete independent of them, but the old view, that the tumors are metamorphosed sebaceous glands, has scarcely any supporters. The organism which produces the change is still undiscovered. The psorosperm theory was soon exploded.

Anatomy.†—When a vertical section is made through the center of a small well-developed tumor, it is seen to consist of wedge-shaped lobules, all converging towards a common center, the central being the smaller end; between each lobule is a very thin fibrous septum, and the whole is inclosed in a fibrous capsule, incomplete above, with its base in the corium. While the border is continuous with the epidermis, each lobule is bounded by palisade epithelium, and round, nucleated epithelium lies adjacent, but even in many of the lowest cells, the molluscous degeneration has commenced. This consists of a change which renders the cell substance opaque, white, and homogeneous, like amyloid degeneration, and this gradually encroaching on the cell substance ultimately fills up the cell, enlarging it, obliterating its structure, and making it quite homogeneous, and it is then the so-called "molluscum body." These bodies accumulate

* Shattock's paper on Avian M. Contagiosum should be referred to, *Path. Trans.*, vol. xlix. (1898), p. 394.

† "Unna's Histopathology," p. 794. Unna is strangely in error in classing me among those who do not believe in the origin of the change in the prickle cell layer. Though I do think it can be proved to start in many growths in the prickle layer of the hair follicle. I stated in my 1893 edition that it also arises in the rete, apart from the follicles.

at the mouth of the lobule, and with those from the other lobules form a yellowish mass, which does not stain with carmine or other dyes, and the horny layer over it giving way, some of this mass often falls or is squeezed out, and the hole that is usually described at the mouth of the follicle is formed. The resemblance to gland structure is very complete, and the old view was that the tumor was merely an enlarged and changed sebaceous gland.

Virchow first put forward another view, viz., that the disease is in the Malpighian layer, and he thinks that the disease begins in the hair follicles; the observations of Boeck, Lukomsky, Piffard, Sangster and Thin, etc., confirm this view, and I can indorse it for some tumors, but it is only by examining them in the early stage that this can be made out. Another proof that they are not sebaceous gland structures is that they have been observed on mucous membranes (Colcott Fox and Abraham on the tongue).

The following description is from my own observations: Taking a tumor at the earliest period recognizable, when it is only about the size of a pin's point, a vertical section shows the molluscum bodies accumulated in a small mass at the top of the rete; and in the granular layer, below this, there is only a partial change in the rete cells, and it gets gradually less until they are quite normal, or only a very few of them adjacent to the boundary of the palisade cells are affected; the interpapillary processes are already enlarged, both vertically and laterally, and the papilla is thus narrowed and elongated, but as yet there is no sign of glandlike structure. The most striking feature is the small accumulation of altered cells at the surface, and it is evidently a rete change. Many sebaceous glands and hair follicles are quite healthy, but in some of the hair follicles the cells present the same alteration, the process being always most advanced close to the shaft (Fig. 36). Taking next a tumor slightly more advanced, as in Fig. 35, it is found to consist of wedge-shaped lobes separated by a fibrous septum, formed by the compressed papilla, elongated by the continued downgrowth of the rete; in the center of the tumor are molluscum bodies, compressed above, so that the outline of the component cells is indistinct or lost, and if the section has been made through the center of the tumor, the rete is seen to be continuous from the surface to the deepest part of the tumor, forming a flask-shaped depression, bounded by the palisade cells, giving the appearance of the formation being due to an inversion of the whole epidermis, and the fibrous septa are the obliterated papillæ. Thin considers that the molluscum change commences in the cells of the upper layers of the rete; Campana, that it begins in the stratum granulosum; I think it begins at the deep part of the rete, and increases as the cells progress to the surface; while Lukomsky asserts that molluscum bodies are derived from leukocytes.

The change in the rete cells which results in the formation of the so-called "molluscum bodies" is, according to Török and Tommasoli, a hyalin or colloid change, and Unna says that it only occurs in the central portion of the prickle cell, while the normal keratinization takes place at

the periphery. The latest observations are those of Charles White,* who has made a careful examination by modern methods, but, from the context, apparently not on the smallest tumors. Like myself and others, he found the change increasing from below upwards. The septa between the component lobules of the tumor consist of keratin. There was an empty perinuclear space in the Malpighian and granular cells, and inflammatory reaction round the tumor with colloid (?) degeneration. The molluscum bodies, he was satisfied, consisted of normal keratin. His coworker, Robey, could find no organism except the staphylococcus epidermidis albus of Welch, and they express the opinion that so far it is undiscovered, and in my opinion it never will be found unless the earlier stages are investigated.

Diagnosis.—The small sessile or slightly pedunculated, solid tumors, with their central depression, once seen, would scarcely be mistaken, but when numerous and pearly they are very like vesicles, such as those of varicella. In exceptional cases it may also simulate other eruptions; thus Abraham † met with a case where some of the lesions were very like lichen planus; Pringle,‡ where some of them on the scalp were like a rodent ulcer, and Kaposi's case § was like a bromid eruption, and this it probably was. A fungating growth at the angle of the mouth of a boy was referred to me as a possible chancre, but there was no adenitis, and a small characteristic lesion was found on the chin. The difficulty can generally be got over by a careful examination of all the lesions, when probably some would be characteristic, and the molluscum bodies could be found by the microscope. In the varicella-like form, the dura-

* "Molluscum Contagiosum," by Charles J. White and William H. Robey. Reprint from *Journal of Medical Research*, vol. vii., No. 3, April, 1902, pp. 255–277. References to date and general review. White follows Unna in misrepresenting me as a believer in the glandular origin of the tumor.

† Abraham, *Brit. Jour. Derm.*, vol. xi. (1899), 474. The tongue was affected, simulating large patches of leukoplakia, but really made up of of papules.

‡ Pringle, *Brit. Jour. Derm.*, vol. x. (1898), p. 418.

§ Kaposi, *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1385. Rep. Vienna Derm. Soc. and Plate 226 of his Hand Atlas. The patient was a suckling, æt. six months. The eruption was very extensive, had been developing for six weeks, and fresh attacks appeared in a few hours. The lesions were exactly like those of bromid. Examination for molluscum bodies was negative except on a lesion on the throat. Bromids are so frequent in quack medicines that a negative history on the mother's part does not count for much.

tion and the effect of pricking, which would show them to be solid, would prevent error.

Prognosis.—While no doubt cases do sometimes get well spontaneously, it is usually much more than the month or two

Fig. 35.—Section through the center of a very small tumor of molluscum contagiosum just perceptible to the naked eye. × 125.

a, rete mucosum continuous with the tumor; *b*, plug in center of tumor formed by an accumulation of molluscum bodies; *c*, cells of the rete in process of conversion into molluscum change; *d*, *d*, cells in an earlier stage of conversion into molluscum bodies; *g*, pseudo-lobe of tumor formed by vertical and lateral growth of the interpapillary processes; *f*, fibrous septum between lobes of tumor formed by compression of papilla; *e*, sebaceous gland of small hair follicle.

mentioned by Hutchinson. I have had cases of nine, ten months, and more. Walter Smith's giant form dated back thirty years, and there had been no fresh ones for fifteen years or more. Another case in his table was one and a half years. The short duration of the majority of the cases is probably accounted for by the fact that advice would be sought in most cases as soon as the lesions became conspicuous.

Treatment.—This is simple and effectual. The tumor should be split from below upwards with a sharp knife, and pressure being made at right angles to the incision with the thumb nail and handle of the scalpel, the contents are readily evacuated;

rather free bleeding is easily stopped by a pad of lint. Some recommend that the interior should be touched with nitrate of silver, but it is unnecessary; others dispense with the incision, but this is almost painless, and the extra pressure required to empty the tumor without it gives much pain. Very small nodules may be touched with the end of a match dipped in the acid nitrate of mercury or ethylate of sodium.

These or similar applications should be used for very young

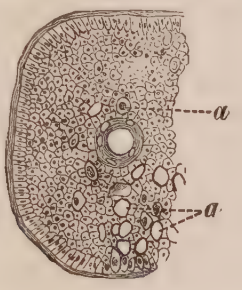


Fig. 36.—Transverse section of a hair follicle in an early stage of molluscum contagiosum. × 550.
a, *a*, epithelial cells showing molluscum change.

children, for while the pain of expressing them is slight for an adult, it is serious for the young, especially when the lesions are numerous. Hallopeau recommends tincture of iodin to be introduced into the tumor by the pointed end of a match. The tumor dries up and shells off more quickly if some of the contents are squeezed out before the iodin is introduced.

XANTHOMA.*

Deriv.—ξανθός, yellow.

Synonyms.—Xanthelasma; Vitiligoidea; Molluscum cholestérique (Bazin); Fibroma lipomatodes (Virchow).

Definition.—A fibro-fatty neoplasm forming yellow plates or nodules in the corium.

Xanthoma is not a common disease under any circumstances, but the cases in which it is limited to the eyelids (X. palpebrarum) are much more frequently met with than those

* *Literature.*—Author's Atlas, Plate LVIII., illustrates palpebral, nodular, and congenital forms. St. Louis Atlas, Plate VIII., illustrates X.

where the lesions are more generally distributed (X. multiplex). Most of this latter form are of congenital origin in the young, and connected with jaundice or glycosuria in adults.

It occurs in two forms, in plates (**X. planum**), and in nodules or tumors (**X. tuberculatum** or **tuberosum**); they represent little more than differences in position, shape, and degree of development.

Symptoms.—**Xanthoma palpebrarum** constitutes the great bulk of the cases, and is almost always in **plates.** It usually commences on the internal canthus of the left upper eyelid, and by the gradual coalescence of several patches sometimes forms a semicircle round the eye. Sooner or later similar patches appear on the right side, the disease being always symmetrical if it has been present long enough, though the left side is naturally more advanced in development. The plates are imbedded in the corium, very slightly or not at all raised above the surface, of a chamois-leather-yellow color, which becomes more distant when the skin is stretched, of irregular outline, but tending to be elongated, from about an eighth of an inch to one inch in their long diameter, quite soft and smooth to the touch, and the skin does not seem thickened when pinched up. With a lens the patches can often be seen to consist of an aggregation of small yellow granules, which usually have a central pinkish punctum.

The **nodules** are of the same color as the plates, project more or less above the surface, and as a rule are from a millet seed to a large pea in size, but may even be as large as a small apple. The small ones are convex, roundish, or oval, often have fine tufts of vessels over them, and are quite soft and smooth to the touch. The larger tumors, being compounded from the smaller ones, are irregular in contour and of more or less firm consistence, according to the amount of connective

planum in large plaques. It is not a case of X. diabeticorum, though glycosuria was present. Pye-Smith, *Guy's Hospital Reports*, 1877. Hutchinson, "Clinical Report on Thirty-six Personal Cases of X. palpebrarum," *Med. Chir. Trans.*, vol. liv. (1871), p. 171 (some of the statements require some modification in the light of further experience). Gendre, "Paris Thesis on Xanthelasma," 1880. Report of Xanthoma Committee of the Path. Soc. on Startin's and Mackenzie's cases, vol. xxxiii. (1882), p. 376. In the same volume is a very complete *résumé* of the clinical facts up to that date, with tables of X. multiplex cases.

tissue they contain. Unless there is jaundice present, the skin round and between both nodules and plates is quite normal.

X. multiplex in the adult is most frequently associated with jaundice of long standing, and the lesions are both in plaques and nodules. Its distribution may be very wide, affecting not only the skin, but also the mucous and serous membranes and the tendons. The most common positions are the eyelids, where it generally commences, the palms and soles and backs of the hands and feet, especially the knuckles, the elbows, knees, buttocks in and near the cleft, and round the anus, and the flexures generally.

The plaques are most frequently found on the eyelids, flexures, and mucous membranes, and the nodules on the extensor aspects, especially on parts exposed to irritation, like the knuckles, elbows, and knees. Symmetry is observed in multiple as well as in eyelid cases, and the limbs are much more involved than the trunk.

As a rule, the disease gives rise to no inconvenience except from its disfigurement or position; sometimes, however, burning, pricking, or itching has been experienced, and occasionally the sight has been interfered with by the new growth overhanging the eye, or by its size interfering with the movement of the eyelids, and when it is on the palms or knees, grasping or kneeling may be attended with discomfort, or even pain.

In most instances the lesions appear gradually, and increase slowly by aggregation; then, after months or years, development ceases, and there is no further alteration; in three instances, however, involution has spontaneously occurred after several years, without any pigmentation or scarring being left, and in one other case, apparently as the result of treatment.

Variations.—The plane form may be seen in lines or striæ, especially in the flexures and on the palms and soles; in papules and macules as well as in plaques, and accordingly some authors give names to all these forms, such as **X. lineare vel striatum, X. maculatum et papulatum,** representing for the most part early lesions of which the patches are formed. Then some would make a **X. tuberculatum** for the smaller and **X. tuberosum** for the larger tumors, but these are unnecessary refinements. The color is not always like chamois

leather; it may be of any shade of yellow, from yellowish-white upwards, and a certain amount of blackish pigment may, in rare instances, be seen in the lesions. Abercrombie showed me a case at the Charing Cross Hospital due to jaundice, in which, along with the ordinary lesions, the front of the neck and lower lip formed one large area of a dirty, slightly yellowish-white color. There was no perceptible elevation or thickening of the skin, but the natural depressions were exaggerated like orange peel. The less common positions for X. multiplex on the skin are the ear, neck, back, and chest; in Hardaway's case the lesions were distributed like zoster over the ninth and tenth rib-spaces of the right side, the prepuce, glans, and other parts of the penis and scrotum, and under the nails. It has been observed on the mucous membranes of the cornea and conjunctiva, the sides of the tongue, the angles, roof, and floor of the mouth, the palate, pharynx, larynx, trachea, bronchi, esophagus, capsule of the liver and spleen, the peritoneum, round the rectum, the lining of the bile ducts, and the inner coat of the arteries and on the sheaths of tendons, such as the Achilles tendon and those of the extensor aspect of the fingers. Then the lesions may first appear on, and even be restricted to, unusual positions, such as the outer canthus, the cheek, the side of the neck, nates, the root of the penis, and the heel and soles; and X. multiplex has begun on the elbows, the flexures of the fingers and palms, and appeared on the eyelids subsequently; in Robinson's case it came in a large patch on each elbow, and did not affect any other parts. This irregularity of distribution is more common in children and in congenital cases. In Köbner's case, a man, æt. twenty-seven, on the other hand, the tumors were reddish-brown or reddish-violet, and situated in lines along the axillary folds and in the axillary region generally; their color was due to their development in capillary nevi, of which there were a large number besides the X. nodules; it began when two years old, the mother said. Besides this association with vascular nevi, Köbner records a case which was associated with fibroma, and Hutchinson one with fusiform enlargement of many tendons. The case of Startin junior, a child, also had fibroid thickening round the joints, with xanthoma chiefly round the anal cleft and on the limbs.

Children.—When the Xanthoma Committee published their

report (1882), only eight * cases were known. Their statements were to the effect that cases before puberty are structurally the same as adult cases, but etiologically different, having no traceable connection with hepatic disease, but are in some cases probably hereditary, in some congenital; that the eyelids always escape, that the eruption is always multiple, and that there is a great tendency to nodules. Many cases have come to light since this, which modify some of these statements. In the case of Vincentiis,† a girl of twenty, it began when five years old without apparent cause, affected the eyelids, shoulders, and hands, in plaques and nodules. In a case of Hutchinson's ‡ the disease began on the middle of the eyelids, and soon after on the ear lobes as large as a finger-tip. In a case of Barlow's,§ congenital, but with subsequent development, in a boy nearly seven years old, it was also on the eyelids in patches, and there was yellow pigmentation on the lobes of the ears and elsewhere. In a still more remarkable unpublished male case of his, which I saw, the disease began when a year old, without known cause, in the right upper eyelid; at six years old the lesions were in patches and nodules, surrounded both orbits, and were deeply pigmented, of a dull dark brown color in the greater part, and dull yellow in the rest; there were more typical lesions in other parts of the face and on the back of the forearms; the child presented some signs of hereditary syphilis, and had an enlarged liver and spleen. Jackson's case ‖ was remarkably extensive and very symmetrical, the eyelids, especially the right, were much affected, and no part, except the hands, feet, and scalp, was quite free; it was said to have commenced when three months old. Köbner's case¶ began at two years old on a vascular pigmented nevus in the right axillary region. When Köbner saw him he was aged twenty-seven, and the growths, which were numerous and in rows on the axillary folds, were from brownish-red to violet, sprinkled

* Török collected thirty cases up to 1893.

† Quoted by Chambard, with critique of histology, in *Ann. de Derm. et de Syph.*, vol. v. (1884), p. 81.

‡ *Archives*, vol. ix. p. 201.

§ *Path. Trans.*, vol. xxxv. (1884), p. 405, with colored plate.

‖ *Amer. Jour. Cut. and Gen.-Urin. Dis.*, vol. viii. (1890), p. 241.

¶ Köbner, *Viertelj. f. Derm. u. Syph.*, vol. xv. (1888), p. 393 (colored plate). Abs. in *Annales de Derm.*, etc., vol. i. (1890), p. 359.

over with yellow papules. There had been some lesions in the left axilla, but they had flattened down to reddish-brown spots. In spite of their color the histology showed that they were xanthoma. There were also numerous vascular nevi, the size of a pin's head, in the lower axillary region.

Gwynne of Sheffield had a case of a boy, æt. nine, in whom the disease began when four years old, first on the elbows, then over the tendo Achillis, on the web of the fingers, and on the ears. There was nothing in himself or in his family history to account for it; the lids were not affected, but they were in Letzen and Knauss' case,* which also began when four years old on the eyelids, after suffering from many widespread abscesses, and, as in Startin's case, the nodules were abundant on the borders of the anal cleft.

In a case reported by A. Pönsgen,† a boy, æt. twelve years, the eyelids escaped, the limbs were chiefly affected, and the disease, which began when he was ten years old, was associated with aortic stenosis, rheumatic nodules, and fatty tumors.

In a man of twenty-three, recorded by Thibierge,‡ the tumors were enormous, they began at eight years of age, and his brother also had the disease. I have met with a very similar, but not quite so highly developed, a case in a youth, on whom it had commenced, at the age of fourteen, simultaneously on the elbows and knees. A brother was slightly affected.

In a case of my own, a healthy boy of two years, there was a single oval yellow nodule, five millimeters long, on the left lower eyelid, which had been growing six months; it was excised, and proved to be of the usual structure.

In another case, a boy of six, brought to the Shadwell Hospital for articular rheumatism, there was a smooth flat patch on the middle of the right eyelid, of a buffy-white color, and made up of slightly raised, soft, millet-seed-sized granules.

I have also met with a yellowish-white patch, exactly like xanthoma, imbedded in the tongue near the tip, to the right of the raphé, in a female infant, æt. three months; it was first

* Virchow's *Arch.*, vol. cxvi. (1889), Heft i., with plate.

† Virchow's *Arch.*, February, 1883, with *résumé* of whole subject of xanthoma, and extensive collection of cases.

‡ International Atlas, Plate XLI., with histology by Darier.

noticed when the child was two weeks old, and was most likely congenital.

Probably, therefore, slight developments of xanthoma are not so rare in children as is generally supposed, but give no trouble and are overlooked. It is noteworthy that in all these three cases the lesions were unilateral.

Etiology.—The etiological relations are the most interesting features in the disease, but it is essential to consider eyelid apart from multiple cases, and those occurring before puberty from those after that period. Taking X. palpebrarum first, it it certainly more common in females than males, but owing to these and multiple cases being mixed up in most statistics, it is impossible to state in what proportion; Hutchinson's 36 cases make it 3 to 2. Most cases begin over forty years; the extremes, excluding children, are 20 to 84 (Hutchinson). The disease shows remarkable family prevalence, and may be hereditary. In Church's series 1 male out of 5, and out of 12 females who had reached the age of forty, 3 of the first generation and 2 of the second were attacked. Hilton Fagge mentions an instance in which mother and daughter were affected, and the disease had existed for four generations in their family; and Török, in which it affected three generations. It may also skip a generation; thus Hutchinson records an instance of two brothers and their paternal grandmother having it.

Of other conditions, dark-complexioned people, and those with a tendency to deep coloration about the orbit, are certainly more liable to it, but migraine is the most important factor; half of Hutchinson's cases suffered from it. Gout and perhaps ovarian disturbances are answerable for a certain number; and hepatic derangements, especially such as lead to jaundice, are frequent, one-sixth of Hutchinson's cases having suffered from jaundice; at the same time it is much less frequent than in X. multiplex. In one case I met with there was diabetes insipidus with some gouty tendency.

In X. multiplex, in those above puberty, four-fifths of them are associated with chronic jaundice, which has been due in different instances to stricture of the duct, gallstone, hydatids, cancer, red atrophy, and hypertrophic cirrhosis. It would seem, therefore, that jaundice is the chief cause, but in what way is not apparent, possibly a toxin is the real factor. Accord-

ing to Besnier * and Gailleton, there is a **xanthochromia** of the skin, not due to jaundice in some cases. It is more marked on the face and trunk than on the limbs, but the conjunctivæ and buccal mucous membranes are uncolored, and there is no bile in the urine and feces.

In cases without jaundice, including one of my own, there has been in some a history of migraine, and the sister of my case had eyelid xanthoma on the right side and migraine; another had syphilis; and there was no obvious cause in the other three. The cases associated with diabetes mellitus present many peculiarities, and are described separately.

Xanthoma below puberty is still rarer than after it, less than forty cases being recorded. It is not associated with jaundice as a rule, but shows a family prevalence; eight out of thirty cases Török found in four families. It is occasionally congenital and hereditary, and in several instances a rheumatic and gouty inheritance has been present.

Pathology.—The process in X. tuberosum is essentially that of a connective tissue neoplasm in the corium, whether inflammatory or not is disputed, in the meshes of which lie large epithelioid, fattily degenerated or infiltrated cells, or, as some say, masses probably derived from the connective tissue elements, while yellowish-brown pigment is deposited in the rete. For my part I consider inflammation as the primary feature, and the xanthoma cells and the connective tissue growth secondary, and the whole process of toxemic origin. Köbner thinks the lesions are derived from embryonic remnants, and the view that they are closely allied to non-vascular nevi finds advocates in Hallopeau and others, and explains well the juvenile cases which are sometimes associated with other forms of nevus.

Török concludes that the xanthoma plaque is composed of adipose cells interrupted in their progress to complete evolution, and that it is not a tumor, but an excess of growth.

Unna says that the fat in X. palpebrarum is a sort of fatty infiltration of the orbicularis muscle, the fat being in the lymph

* Besnier, Hallopeau, and Kaposi regard the jaundice and visceral troubles as secondary, and due to the xanthoma process in the viscera. The clinical order of development of most cases does not support this view.

spaces, and the giant cells being sections of dilated lymphatics. Pollitzer follows Unna, and says that the eyelid lesion is a different process altogether to the nodular form; it is the product of the degeneration of embryonically displaced muscle fibers. Previously the differences have been regarded as only due to the predominance of connective tissue growth in the nodular form; and against Pollitzer's view is the clinical fact that both in adults and children it is not unusual for the disease to begin in the eyelids and then spread all over the body.

Darier, who examined the large tumors of Thibierge's case, came to the conclusion that it was a perivascular, and consequently convoluted, neoplasm. The xanthomatous matter was contained in the cells (differing from Unna's view) which are derived from the connective tissue cells. The giant cells were very numerous except in the subepithelial zone. The tumors showed all the characteristics of xanthoma, and it is unusual to find them all in one tumor.

Anatomy.—The anatomy has been investigated by myself, and by numerous observers, of whom Chambard,* Balzer,† Touton,‡ Török, Unna, Pollitzer,§ etc., have made the most complete examinations. According to Chambard there are two processes going on, an increase of connective tissue and a fatty degeneration or deposition, the results of a chronic inflammatory process; in the soft plaques the fatty change, and in the nodules the connective tissue growth predominates, being greatest in the larger and firmer ones.

Touton disputes these simultaneously progressive and retrogressive processes; he regards xanthoma as non-inflammatory, and as a veritable new growth, composed of elements which are not normally present in the corium. The "xanthoma cells," which he says are infiltrated with fat from the first, have a distinct membrane, finely granular or fibrillated contents, and large round or oval nuclei. He thinks there are mixed tumors, such as fibro-sarco-myxo- and cyst-adeno-xanthomas, and that

* Chambard, "Des formes anatomiques du xanthélasma cutané," *Archives de Physiologie*, 1879, p. 641, with plates.

† Balzer, "Recherches sur les caractères anatomiques du xanthélasma," *Archives de Physiologie*, 3me serie, 1884, p. 65.

‡ Touton. "Ueber das Xanthom insbesondere dessen Histologie und Histogenesis," *Viertelj. f. Derm. u. Syph.*, vol. xii. (1885), Heft i. p. 3, with plates and full references to previous observations.

§ Pollitzer, "The Nature of the Xanthomata," *New York Med. Jour.*, July 15, 1899. L. Török, "De la nature des Xanthomes," *Annales de Derm. et de Syph.*, vol. iv. (1893), November and December, and p. 50, vol. v. Unna's "Histopathology," p. 945.

there is cystic transformation of the confluent destroyed xanthoma cells. L. Dore thinks that there are also myelo-xanthomas, and that the cells of each have a common pathogenetic origin. No one accepts Balzer's parasitic infective theory, which does not at all accord with the general facts ; moreover, the specimens were taken twenty-four hours after death. I examined a large plaque from the eyelid of a woman who was a martyr to migraine, and had X. multiplex without jaundice then, though it developed subsequently. I found large epithelioid, multi-nucleated, oval, roundish, or polygonal, finely granular cells in a fine meshwork of connective tissue. In very fine sections each cell can be seen to lie in a

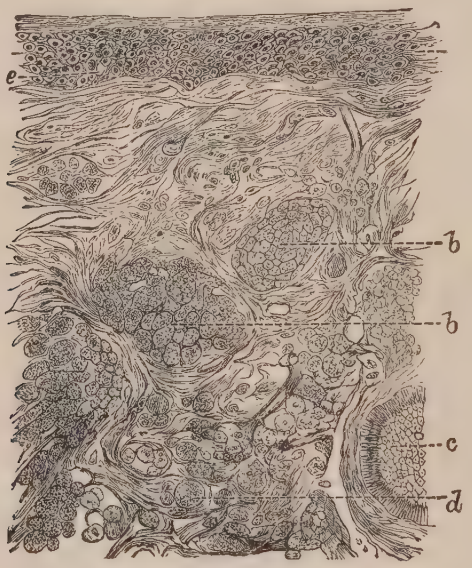


Fig. 37.—Large xanthoma plaque from eyelid. 2-in. oc., ¼-in. obj. *a*, rete Malpighii, many of the cells of which are undergoing vacuolation as at *e* ; *b*, cylindrical masses of xanthoma cells formed round a vessel ; *c*, hair follicle ; *d*, large multi-nucleated granular xanthoma cell.

mesh of connective tissue, the cells being either in irregular masses, or in many instances arranged in whorls or nests round a center, this arrangement being due to their formation round a blood-vessel. The individual cells vary much in size, have a defined outline, are finely granular, with from one to half a dozen or more nuclei (see Fig. 37).

The process is chiefly in the middle and lower layers of the corium, through which yellowish-brown pigment is scattered, both free and in cells, the papillary layer being almost normal. There is also a certain amount of deposition of yellow pigment granules in the rete cells, a large proportion of which show vacuolation in a varying degree. This struc-

ture agrees with that described by Touton. The origin of the cells in X. palpebrarum is traced by Pollitzer to degenerated muscle cells, while he admits that X. tuberosum and the lesions of X. diabeticorum are both connective tissue neoplasms, in which the relative proportion of fibrous tissue and connective tissue cells varies in different cases. In both, the cells undergo fatty degeneration, resulting in the destruction of the cells, and ultimately in the more or less complete disappearance of the nodule.

In the nodules the process is more superficial; the bulk of the lesion, being situated in the papillary layer, pushes up the epidermis above the level of the surrounding surface. The connective tissue is increased, distributed in foci, and in greatest abundance round the hair follicles and sebaceous glands; the fatty masses are less conspicuous, but yellow oil

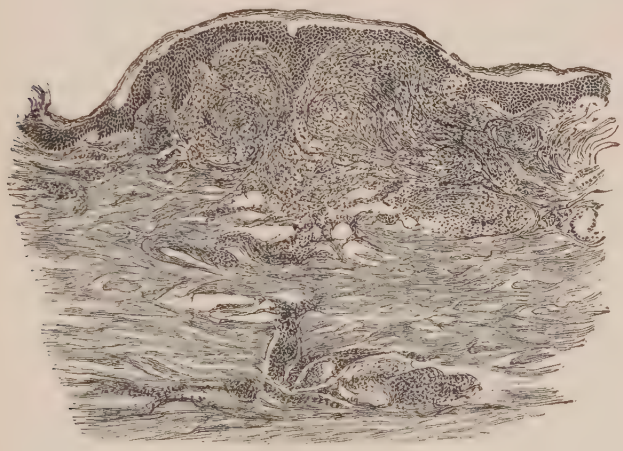


Fig. 38.—A small nodule of xanthoma tuberosum from the elbow, showing that the lesion is situated almost entirely in the papillary layer, pushing up the rete into a nodule. Almost the whole morbid area is made up of epithelioid cells. × 1-in. Ross, 2-in oc.

globules infiltrate the meshes between the fibrous tissue. Chambard also found peri- and endarteritic and perineuritic thickening, but probably this is only present in the nodules in which the connective tissue increase is considerable (Darier).

Xanthoma Elasticum (Balzer),* or **Pseudo-xanthoma Elasticum.** Balzer described a form in which the elastic tissue was in numerous large coils, chiefly round the follicles, and formed the greater part of the tumor. The fibers were swollen, degenerated, and in parts broken into and segmented. In Balzer's case the lesions began in early infancy, and were flat and pale yellow, sometimes papular, and were widely

* Balzer, *loc. cit.*

distributed in the folds of flexion. Besnier and Doyen* quote another case by Chauffard with very similar features, Besnier comparing it with X. diabeticorum. The eyelids were free in both cases. Darier's† microscopic examination was made on material from this case.

He confirms Balzer's observations with regard to the elastic fibers, but considers it a different disease to xanthoma, as xanthoma cells and fatty granules were absent. Bodin‡ has published a third case, a man of fifty, in whom the skin affection had existed for thirty years without inconvenience. There was a palm-sized median patch below the umbilicus, and others strictly symmetrical in the mid-clavicular region, the anterior fold of the axilla, the inner central part of the arm, the upper and flexor aspect of the forearm, and the upper and inner part of the thigh. The eyelids and other usual positions of xanthoma were free and the mouth was unaffected. In the center of the patch the individual lesions were confluent, but were discrete in normal skin at the periphery, where they varied, and in size from a pin's head to a pea. They looked like little yellow masses of butter beneath the normal epidermis. In this patient, like the other, there was advanced lung tuberculosis, and neither hepatic nor diabetic symptoms. Bodin confirmed Darier's observations and considered the process due to a degeneration of elastic tissue; the giant cells, he observed, were quite different from true xanthoma cells, consisting of masses of nuclei imbedded in very little protoplasm. The resemblance, therefore, is only a clinical one. Clinically, the quite different distribution, the absence of hepatic and renal disease, and the flatness of the lesions are the chief points of distinction from true xanthoma. Payne has described a generalized xanthoma with abundant elastic tissue, but in his case regarded the excess as only relative to the atrophied connective tissue.

Diagnosis.—The presence on the eyelids of chamois-leather-colored patches, imbedded in the corium, without imparting a notable change in texture to the touch, is very distinctive. Milium§ may present a slight resemblance, but when large enough to simulate xanthoma, the little tumors are hard and tense, do not coalesce completely, are whitish in color, often with a black center like a comedo, and more superficial, being imbedded in the epidermis, from which they can easily be shelled out by an incision over them; moreover, if pricked, some of their contents can be squeezed out, and this will settle

* Besiner-Doyen's Kaposi, vol. ii. p. 336.

† Darier, *Third Internat. Cong. Rep.*, 1896, p. 289; Unna's "Histopathology," p. 953.

‡ Bodin, *Annales de Derm. et de Syph.*, vol. i. (1900), p. 1073. Good abs. in *Brit. Jour. Derm.*, vol. xiii. (1901), p. 231.

§ Author's Atlas, Plate LXVIII. Fig. 2, shows grouped milium at inner canthi.

the matter. Solitary lesions in children are to be distinguished by their color and softness from non-pigmented or white moles, and the latter are always congenital, which xanthoma very rarely is.

X. multiplex in the adult nearly always has jaundice to point to the right conclusion. The presence of the lesions in the corium must be borne in mind, as a case is published in the *British Medical Journal*, by a good observer as a rule, as one of X. multiplex, where yellow spots were in the epidermis only, and came off after soaking in olive oil.

In two instances * to my knowledge cases of urticaria pigmentosa of infancy and childhood have been reported as X. multiplex. The early onset of the lesions without being congenital is very unlikely; then the lesions are firm in the urticaria and soft in xanthoma. Itching is nearly always a prominent symptom in urticaria pigmentosa, and close observation would detect the occasional presence of ordinary wheals, while factitious urticaria can generally be demonstrated. Pollitzer † records a case from Sangster's clinic in which *multiple dermoid cysts*, to the number of about 150, almost white or of a lemon-yellow color, were indistinguishable from X. multiplex until microscopic examination was made, and refers to other cases of similar character and consequent error. Sangster's case was a woman, æt. twenty-four, in whom the disease began when sixteen years old. The tumors were situated symmetrically behind the ears, on the neck, and chest. Two of her brothers also had it. All the members of the Dermatological Society considered it a xanthoma.

Prognosis.—The involution of the lesions observed in the cases of Fagge, Frank Smith, Legge, Kaposi, and Pollitzer does not materially alter the prognosis, which is that, after progressing up to a variable extent, the lesions become stationary, and remain so for the rest of life. Pollitzer's more favorable prognosis is not supported by clinical facts, though

* Tchistiakoff's case, abs. in *Brit. Jour. Derm.*, vol. iii. (1891), p. 65, is evidently of this kind, and Dr. Barr's case in *Lancet*, May 12, 1888. He was kind enough to show me the case at the Leeds meeting of the British Medical Association, and I recognized it as urticaria pigmentosa without doubt. Urticaria factitia also was present.

† *Brit. Jour. Derm.*, vol. iii. (1891), p. 398.

doubtless the nodular is more likely to involute than the plane form.

Treatment.—Excision is the only means of cure, since the disease lies in the corium. Dissection through the whole thickness of the skin is required, but great care is necessary not to go too deep on the eyelids, or ectropion is produced. Especial care is required near the inner canthus of the lower lid, as very slight contraction will produce epiphora. The result is very satisfactory, as a linear cicatrix is nearly always possible, and this is imperceptible in the folds of the eyelid. Success has, however, been obtained by other means; thus, by rubbing in soft soap and making the patient wear india-rubber gloves, Kaposi removed from the hands some tubercles which he regarded as xanthomatous. Morrow applied salicylic plasters twenty-five per cent. to nodules on the soles and knees, and when the plaster was removed the epidermis and a number of xanthoma nodules came with it, while the others were so much softened that they could be curetted out. Fox of New York removed patches on the eyelids by electrolysis in five sittings of one minute each, and a current of one to three milliamperes; McGuire of Georgetown destroyed the disease in two cases by repeated applications of monochlor-acetic acid. Painting the palms with collodion containing five per cent. perchlorid of mercury gave great relief in Darier's case, and Leslie Roberts used salicylic acid ʒj, chrysarobin ʒss, ol. ricini ʒss, collodion flexile ʒj with disappearance of palmar lesions, but without affecting those on the elbows and buttocks.

XANTHOMA DIABETICORUM.*

This is an extremely rare affection, but it is becoming generally recognized, and there were over thirty cases on record up to 1900. It differs in many respects from the usual type of

* *Literature.*—Author's Atlas, Plate LIX. Dr. Hughes' case, p. 160 of Syd. Soc. ed. of Addison's works, model 2738, Guy's Museum. *Path. Trans.*, vol. xvii. (1886), p. 414, a case called by Bristowe "Keloid of a rare form." Malcolm Morris, *Path. Trans.*, vol. xxxiv. (1883) p. 278, with plate of histology, and at p. 284 is the report of the committee on the subject. A case in Hillairet's clinic, reported in Gendre's "Paris Thesis on Xanthelasma." Chambard also has written a critique on the

xanthoma. The first cases were reported by Addison, Bristowe, and Malcolm Morris, to the last of whom belongs the credit of recognizing it as a clinical entity.

Symptoms.—The eruption consists of dull red, discrete or confluent papules, quite firm to the touch, from a line to a quarter of an inch in diameter, well defined at the margin, and roundish or obtusely conical. On the top of many of them, but not of all, is a yellow or yellowish-white head, which looks like a pustule, but is really solid, and some of the papules are dotted or streaked with red from dilated vessels; a red areola is sometimes seen. Itching, pricking, or tenderness is generally felt in the lesions, and in one case shooting pains preceded the eruption. The most common positions are the buttocks,* elbows, and knees, where they are generally confluent † and may form tumors, though the papular origin is generally still discernible. They have also been seen on the trunk, on the extensor surfaces generally, on the mucous membrane of the mouth, on the face, scalp, and bend of the ankles, but are rare on the other flexures, and on the eyelids in Besnier's case. In most cases the lesions are not very numerous, but in some, such as Robinson's, Hutchinson's, and Morris' second case, the eruption is very extensive, the lesions being in such cases very distinctive, with the yellow apex on a red base of larger diameter. The eruption comes out rather suddenly at first, upon the extensor aspect of the limbs, especially the forearms, and then more gradually in other parts; after remaining stationary for some time—months, or even years—the papules begin to disappear, rather quickly when they once begin to go, leaving no trace behind them, or, while some disappear, others come out; or again, they may disappear entirely for a time and then break out once more.

subject in *Ann. de Derm. et de Syph.*, vol. v. (1884), p. 348. Besnier, *Ann. de Derm. et de Syph.*, 1889, No. 5. *Brit. Jour. Derm.*, August, 1892,—cases by Morris and myself, with histology. Török, *loc. cit.*, Part II., who gives references to fifteen cases up to 1892. There are colored illustrations to Jamieson's case in *Brit. Jour. Derm.*, vol. vi. (1894), p. 289. Norman Walker's case, *loc. cit.*, vol. ix. (1897), p. 461, with a table of thirty cases.

* In Jamieson's case the buttocks and lower limbs were free.

† In Pollitzer's case there were large masses on the elbows. Although there was abundant glycosuria in a boy of seventeen, it is probable from the description that it was an ordinary X. multiplex.

In a case of Sequeira's the lesions were in chains tending to form circles, "like a string of yellow coral beads."

Etiology.—Only about one in ten is a female. The ages have been from twenty-one (Norman Walker *) to fifty-seven (Johnstone); † there has been diabetes mellitus in most of the cases, in Bristowe's probably after the eruption, in Hallopeau's and Cavafy's before it—at least the patient had been told he had it and Bright's disease, but there was no sugar or albumin when he came under observation. Hutchinson's case, however, a stout man, never had diabetes or jaundice; his disease came on after "a bilious attack," to which he was subject; it was, however, of the same type as the other cases, and got quite well. Besnier also mentioned a case where there was no diabetes, but the patient was obese and his father was diabetic. Vidal's, Payne's, and Sequeira's cases also had no sugar, so it is not an essential feature. Colombini's case had no sugar, but had pentose and albumin; several of the other cases have had albumin with sugar.

It is noteworthy that, while a few have had typical diabetes, most cases have been stout and well-conditioned, and their aspect by no means suggested diabetes, so that the eruption becomes of some diagnostic value. In my own case it was quite unsuspected until the eruption put me on the track. On the other hand, a woman, æt. thirty-two, a patient of Abraham's, presented typical X. diabeticorum, and had the classic symptoms of diabetes.

In Darier's case, in the St. Louis Atlas, there was hypertrophic cirrhosis, obesity, and glycosuria, and the whole style of the case was that of ordinary X. multiplex.

Pathology.—The diseased process appears to be anatomically of the same nature as ordinary nodular xanthoma, but with more inflammatory phenomena and less connective tissue growth. Since Bristowe and Morris first made anatomical investigations the histology has been more thoroughly gone into by Robinson,‡ Clarke § on Morris' second case, myself, Nor-

* Norman Walker's and two of Hillairet's. One of these, by Gendre, Török regards as an ordinary X. multiplex.

† Pollitzer's doubtful case was seventeen years old.

‡ *Brit. Jour. Derm.*, vol. iii. (1891), p. 106; and International Atlas, Plate XIII.

§ *Path. Trans.*, vol. for 1892, Plate XLIII.

man Walker, and Unna. The last two are quite in agreement and, as before stated, while Unna regards ordinary X. tuberosum and X. diabeticorum as variations in the same process, he considers them both as essentially different from X. planum. Krzysztalowicz * has also examined a case. In X. diabeticorum the whole of the process is in the corium, either superficial or in the center. Large cells † with several nuclei are found in this as in the other form, and they seem to be in abundance in proportion to the size of the lesions. There are, however, few

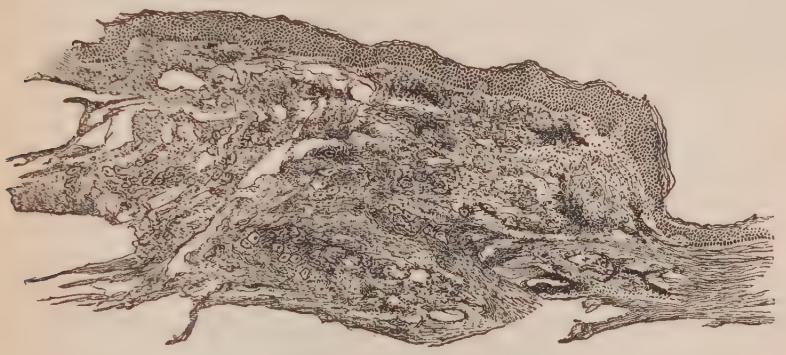


Fig. 39.—A general view of a small nodule of xanthoma diabeticorum, showing that the diseased area extends from the rete Malpighii through the whole depth of the corium, and that it consists of a round-cell infiltration with small groups of epithelioid cells scattered throughout it. Compare with Fig. 38. × 1-in. Ross, 2-in. oc.

in a very early papule, and they are much less developed than ordinary xanthoma cells. In this form also there is no actual connective tissue growth, but Robinson found proliferation of connective cells in large papules. Round-cell infiltration and dilated vessels are here much more marked than in ordinary xanthoma. There is also a greater tendency of the lesion to be situated at the hair follicles. As might be anticipated from the clinical features, the predominance of active inflammatory changes is the most important and striking difference between the two forms.

* In Unna's laboratory, *Monatsh. f. Derm.*, vol. xxix. (1899), p. 201, illustrated, and numerous references.

† Norman Walker, *Brit. Jour. Derm.*, vol. ix. (1897), p. 461. Unna found no multi-nuclear cells. "Histopathology," p. 951.

With regard to its pathogeny, in diabetes, as in jaundice, disorder of the hepatic functions exists, but the clinical facts show that derangement short of that necessary to produce either diabetes or jaundice may yet produce xanthoma.

Diagnosis.—The disease differs from ordinary xanthoma in the following particulars: The sudden evolution and involution of the eruption, the latter always ocurring sooner or later, while, in xanthoma, involution is very exceptional and gradual. The lesions are firm and solid in X. diabeticorum, but in xanthoma all except the largest tumors are soft at the commencement; in X. diabeticorum they are inflammatory, and, as Addison described them, of "a lichenous character"; the yellow

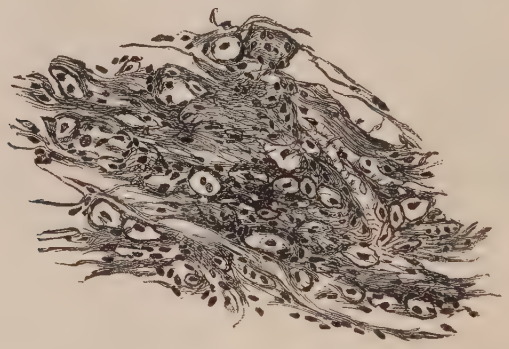


Fig. 40.—A small portion of Fig. 39, more highly magnified to show the epithelioid cells, some of them multi-nucleated. × ¼-in. Ross, 2-in. oc.

top is not present at first, nor in all papules. In xanthoma visible signs of inflammation are quite absent, and the yellow tint is always present. There are never any patches or striæ, but always nodules or infiltrations; this is exceptional in X. multiplex. In the latter, also, it is very rare in the adult not to find jaundice, and for the lesions to be absent from the eyelids; moreover, the ordinary form has never been observed with diabetes mellitus except in the cases of Besnier's, Darier's, and perhaps of Pollitzer's, though it has with insipidus. Subjective symptoms are the rule in X. diabeticorum, the exception in X. multiplex. Finally, the lesions, in many instances, are in the neighborhood of the hair follicles, which is not the case in the ordinary form, and the microscopic appearances are

also different. Probably the comparative acuteness of the process accounts for all these dissimilarities.

Prognosis.—All the cases get well, the majority in a few months; one lasted over five years.

Treatment.—The measures requisite for diabetes exercise a favorable influence on the eruption. Several have appeared to benefit by the administration of arsenic, but the special diet, etc., for the diabetes may have been the real cause of the improvement; it is, however, a good tonic, so may be tried. If any local treatment is required to allay the irritation, liq. carbonis detergens ♏x to ʒj of calamin lotion would probably fulfill all indications; or olive oil might be rubbed in, with or without a few drops of oil of cade.

COLLOID DEGENERATION OF THE SKIN.*

This very rare affection was first described by Wagner as colloid-milium. Cases have since been reported by Besnier, Liveing, Feulard, and others.

Symptoms.—It occurs chiefly upon the upper two-thirds of the face, especially upon the cheeks and orbits, the bridge of the nose and forehead, but in a case of Liveing's the neck and upper arms were also involved. The lesions form slowly in groups, but are not confluent, and consist of pin's-head to millet-seed or split-pea-sized, glistening, translucent, lemon-yellow, flattish elevations imbedded in the skin, looking as if they contained fluid, but when pricked a small jelly-like mass and a drop of blood are all that can be squeezed out. Some have dilated vessels round them, and soon become depressed in the center till the whole is gone, leaving a depression; or

* *Literature.*—Wagner, "Das Colloid-Milium der Haut," *Archiv der Heik.*, bd. vii. (1866), p. 463. Besnier, *Ann. de Derm. et de Syph.*, vol. x., Nos. 5 and 6 (1879); *ibid.*, vol. vi. (1885), p. 342, with histology by Balzer. Models 614 and 1019 in St. Louis Museum. Liveing, three cases in *Brit. Med. Jour.*, March 27, 1886. These were not examined microscopically. Unna's "Histopathology," p. 988, and on "Special Staining," p. 982. "Colloid Pseudo-Milium," C. Pellizzari, *Giorn. Ital. d. Mal. Ven. e d. Pelle*, vol. vi. (1898), p. 692. Abs. *Brit. Jour. Derm.*, vol. xi. (1899), p. 371. Petrini de Galatz reported a case under Colloid at the Congress of Dermatologists at Graz, *Archiv f. Derm.*, vol. xxxiv. (1896), but it was an epithelial disease of a different character.

they may inflame and scab over and dry up, leaving a mark, but not a defined scar (Liveing). The disease affects both men and women from the age of sixteen and upwards, without any departure from health to account for it. Wagner thought that the change began in the sebaceous glands, but Balzer, who examined both Besnier's and Feulard's cases, considers that the degeneration commences as an infiltration in and round the fibers and cells of the upper part of the corium, especially in the neighborhood of the sebaceous glands and their sacs. All epithelial structures escape, except the endothelium of the vessels, which may be attacked with the rest of the walls. There were no cysts or cavities lined with epithelium and filled with colloid substance, and no epithelial bands. Whether the affection is due to vascular alterations in the first place he could not determine, but thought it probable. The absence of cavities, etc., is emphasized, as L. Philippson * has endeavored to establish the identity of colloid of the skin with the hydradenoma of Darier and Jacquet, founding his view on his microscopical observations on two cases from Unna's clinic. Besnier, however, who is familiar with both affections, disputes their clinical identity, pointing out that in colloid the lesions have uniform characters, are limited to the face (this was not so in a case of Liveing's), are not congenital, but of comparatively recent development, and are not associated with other lesions. Balzer, who also examined the Darier-Jacquet case before they did, disputes the histological identity of colloid with hydradenoma. At the International Congress of Dermatologists of 1892, Perrin of Marseilles reported another case with histological examination. The patient, a woman of fifty-four, in bad circumstances, and much exposed to the weather, had an eruption like the cases of Besnier and Feulard on the upper part of the face and the ocular conjunctivæ, and, in addition, had similar lesions on the backs of the hands. The histological examination by Reboul showed the colloid change in the walls of the vessels and in the connective tissue, which was much increased, thus confirming the observations of Besnier and Balzer, and disproving that of Philippson. For the further discussion of the

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 35. He critically reviews all previous cases of colloid, with their references. Besnier's answer to this paper is a long and important note in Kaposi-Besnier, vol. ii. p. 370.

subject, the reader is referred to Lymphangioma Tuberosum Multiplex.

A case reported by G. H. Fox as probably colloid was pronounced by Elliot, after microscopical examination, to be of decided tubercular character. The clinical features also differed from other cases of colloid. Pellizzari's case was a man, æt. forty-five, much exposed to the weather, and also, like Perrin's case, the lesions were on the back of the hands, the cheeks, and nose. They were yellowish papules from a large pin's-head to a pea in size, slightly transparent, but on section no fluid exuded, but a small round body of gelatinous appearance escaped. There was no sign of inflammation. Histologically there were cavities in the derma containing hyaline masses, the elastic fibers had gone, and the external and middle coats of the vessels showed hyaline change. The epidermis was normal. La Meusa's * case was also a man exposed to the weather, and the histology showed that the process was due to a degenerative change in the elastic fibers.

Charles J. White † has recorded a seventh case, an Irishman, æt. fifty-two, also exposed to the weather. The lesions began on the back of the hands, and when seen were also on the face, radiating from the outer canthus, and on the cheeks and ears, where they were very abundant. Each lesion was a smooth flat papule one-eighth to one-quarter of an inch in size, projecting one-eighth of an inch, of irregular outline, very translucent, yellowish-brown in color, and soft, elastic, and almost gelatinous to the touch. On section the papillæ were quite gone, nearly the whole of the corium having been replaced by the colloid material, leaving only a narrow zone of elacin and a few connective tissue fibers. The true colloid ‡ was composed of a groundwork of fine or coarse granules, staining uniformly with picric acid and other stains; perfect connective tissue nuclei were scattered through the homogeneous mass,

* Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 316.

† *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xx. (1902), p. 49. He has missed Pellizzari's and La Meusa's cases and calls his the fifth.

‡ According to Unna, collagen (normal connective tissue) breaks up and combines with elastin (normal elastic tissue) to form collastin. A later step is the combination of collagen with elacin, and produces collacin, and this degenerates into colloid. The elacin does not undergo further change.

and there were many leukocytes near the capillary boundaries.

Diagnosis.—The disease may be distinguished from xanthoma, which it most resembles, by the glistening and translucent appearance of the granules, and while on the one hand it is limited to the face, ears, and hands, on the other it is not limited to the eyelids. To distinguish colloid from such cases as Philippson's microscopic examination would be required. The fact of a patient having been much exposed to the weather would be suggestive.

Treatment.—No internal or external application has any effect. One of Liveing's cases got well spontaneously, but very slowly. Feulard treated his case with good result by erasion of the masses with a sharp spoon. I should try electrolysis.

Pseudo-Colloid of Lips.—Fordyce * has called attention to this curious condition of the lips, which in slight degrees is not very rare. It consists of yellowish, semi-translucent miliary masses the size of an average pin's head, level with or slightly raised above the surface, closely aggregated into a broad or narrow line on the red of the lips, while farther in the oral cavity they may be in small groups or even single. They are not perceptible to the touch, give rise to no inconvenience, are generally discovered by accident, and require no treatment. In one of Fordyce's cases an epithelioma of the lower lip was also present, but no relationship between the two conditions was established.

Microscopically.—Fordyce found the entire epithelial layer considerably thickened, and all the cells except those of the lowest layer had undergone a degenerative change of the protoplasm, leaving the nucleus unaffected. The protoplasm was broken up into irregular glistening granules, which he did not succeed in staining, and the change was not determined, and it is only from the clinical aspect that I provisionally suggest this name.

* "A Peculiar Affection of the Mucous Membrane of the Lips and Oral Cavity," *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xiv. (1896), p. 413. (Colored and microscopic plates.)

TUBERCULOSIS OF THE SKIN.*

A great variety of skin lesions appear to be due either directly or indirectly to tubercle.

In only a few has the presence of tubercle bacilli been proved in the lesion itself, viz., in lupus vulgaris, lupus verrucosus, scrofulodermia, and miliary tuberculosis, and even with regard to scrofulodermia there is some evidence that throws doubt upon its being due solely to tubercle. This is important, as there is a tendency to drop the term scrofula as being only tuberculosis under another name; it is, however, convenient to preserve the old nomenclature, as tuberculosis of the skin has too wide a meaning to indicate by itself the character of the lesion in question.

Broadly speaking, the lesions produced by the direct presence of tubercle bacilli, with which alone this section treats in detail, are characterized by a granulomatous structure with giant cells and tubercle bacilli, which are generally in small numbers, as the bacilli multiply with difficulty in the skin.

Clinically, except the miliary form, they are of slow development, are single or in moderate numbers, and symmetrical in distribution, and ulcerate either spontaneously or with slight provocation, and are then very difficult to heal. When bacilli cannot be found directly, their presence may be inferred when inoculation of the suspected tissue into guinea-pigs and rabbits produces general tuberculosis.

Miliary tuberculosis of the skin appears to be the direct out-

* *Literature.*—Discussion Third. Internat. Cong. Derm., 1896, p. 385, by Nevins Hyde, Hallopeau, etc., "Die Exantheme der Tuberculose," von C. Boeck, *Archiv f. Derm. u. Syph.*, vol. xlii. (1898), pp. 71, 175, 363. "Die tuberkulösen Erkrankungen der Haut," von Jadassohn in Ergebnisse der allgem. Path. und pathologischen Anat. des Menschen u. der Thiere von Lubarsch Ostertag. "The Cutaneous Paratuberculoses," by J. C. Johnston. *Philadel. Monthly Med. jour.*, February, 1899; good abs. in *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xvii. (1899), p. 317. Tomasoli, *Monatsh. f. p. Derm.*, vol. xxi. (1895), p. 309, sees tubercular intoxication in a large number of heterogeneous diseases, but this only shows how common tubercle is in Italy, as his observations are not borne out by the experience of others. "Les Tuberculides," Discussion at the Internat. Congress at Paris in 1900, p. 95, by Boeck, C. Fox, Darier, etc.; and C. Fox's report and table of cases and comments in *Brit. Jour. Derm.*, vol. xiii. (1900), p. 383.

come of visceral tuberculosis, and visceral tuberculosis appears to have resulted from some cases of lupus verrucosus and scrofulodermia; but although the two are occasionally associated, it is very doubtful if phthisis has ever arisen from a nodular lupus vulgaris. It is said that visceral tuberculosis secondary to skin lesions runs a slower and more benign course than those which are primary.

Other lesions of the skin indirectly connected with tubercle may be grouped under the French term tuberculides. In some, such as lichen scrofulosorum and acne scrofulosorum, the evidence of this connection is very strong, and they are probably due to the tuberculin toxin; indeed, lichen scrofulosorum has actually been produced by injection of Koch's tuberculin (Schweninger and Buzzi). In others the connection is less demonstrable, as in erythema induratum of Bazin, eczema scrofulosorum, folliclis of Barthélemy, the pityriasis rubra of Hebra, a dyschromia resembling the pigmentary syphilid, lupus erythematosus, and sundry anomalous cases which are from time to time reported as the result of tubercle. Two or three of the above affections may be associated in the same individual, and Hallopeau has seen together cutaneous and subcutaneous gummata, lupus vulgaris, lupus verrucosus, lichen scrofulosorum, and folliculitis.

The tuberculids are inflammatory in character, and not granulomatous in structure, do not contain tubercle bacilli, and the lesions are often very numerous, bilateral and even symmetrical in their distribution in many cases, and although the disease may as a whole be obstinate, the individual lesions can be easily got rid of. In all except lichen scrofulosorum and acne scrofulosorum the tubercle toxin theory invoked to explain them seems to me highly improbable, since experiments on a large scale were carried out when Koch's tuberculin was in vogue for the treatment of phthisis, and while many thousands of injections were given, only lichen scrofulosorum and a few papulo-pustules were produced in a few cases; and it must be remembered that nearly all the injections were made in tubercular subjects. It may well be, however, that the soil which we call the tubercular constitution may be favorable for the development of other organisms and toxins than those of tubercle, and the fact remains that in the victims of these erup-

tions a very high proportion of them have evidence of tubercle in their near relatives, and sometimes in themselves also. The evidence is not equally strong for all these diseases, and for some of them, especially lupus erythematosus, its connection with tuberculosis is regarded by most dermatologists as a very slender one, or is denied altogether, and in this work it is not treated as a tuberculosis.

The following table may be useful, although it is only tentative, and for any one disease must be read in conjunction with its pathology as set forth in its own section.

DISEASES DIRECTLY DUE TO THE PRESENCE OF TUBERCLE BACILLI IN THE TISSUES.

Lupus Vulgaris	Bacilli sparse.
Lupus Verrucosus Including Tuberculosis verrucosa cutis and Verruca necrogenica.	Bacilli sparse, but less so than in L. Vulgaris.
Scrofulodermia Including chronic ulceration with or without Lupus Papillomatosus and Tubercular Lymphangitis, either nodular or recurrent (Erysipelas perstans of Kaposi).	Bacilli not always to be found; when present fairly abundant.
Miliary Tuberculosis Cutis. Acute or chronic, including ulceration.	Bacilli usually but not always sparse in each small nodule, but abundant in aggregated nodules and resulting ulcers.
Erythema Induratum. Guinea-pig inoculations successful, but bacilli not found in the tissues.	

Some nodular, patchy, ulcerative, suppurative, and otherwise anomalous cases, from time to time reported, which do not accord with the foregoing forms, in which bacilli or a very distinct tubercular structure have been found.

TUBERCULIDES (DARIER); PARA-TUBERCULOSES (JOHNSTON).

(Diseases indirectly due to Tubercle Bacilli)

A.—Probably resulting from their toxin.

Lichen Scrofulosorum And the suppurative folliculitis of the mons veneris, described by Kaposi in connection with some cases of it. Isolated pustules on the trunk are also often present.	Some observers claim to have found Bacilli in the lesions; it has been produced by Tubercle toxin.

Acne Scrofulosorum

And other forms of Folliculitis, isolated or in patches, such as are described by Hallopeau, etc. (*vide* end of article on Acne Scrofulosorum).

Acne Agminata, or Acnitis and Folliclis.

Morbilliform and Scarlatiniform Erythema occur occasionally in the course of acute tuberculosis and after tuberculin injections, but resemble those liable to occur from any toxin.

B.—Probably not due to Tubercle Toxin, but predisposed to by the constitution which is favorable to Tuberculosis.

Eczema Scrofulosorum.

Pityriasis of Hebra (not the ordinary form).

Dyschromia, like the pigmentary syphilid?

Lupus Erythematosus. But Tuberculosis is probably only one of several factors, and is probably not constant.

LUPUS VULGARIS.*

Deriv.—Lupus, a wolf.

Synonyms.—Lupus exedens; *Fr.*, Lupus vulgaire; Scrofulide tuberculeuse; Herpes esthiomène; Dartre rongeante; Esthiomène; *Ger.*, Fressende Flechte; Lupus.

Definition.—A neoplastic cellular infiltration caused by the tubercle bacillus producing papules, nodules, and patches, which either ulcerate or atrophy, leaving scars.

It is a common disease in this country, forming about two per cent. of all cases; as, however, it is an obstinate and very chronic affection, dermatological statistics doubtless exaggerate its frequency, as patients come back year after year.

There are no true varieties of this form of lupus, the numerous qualifying terms which will presently be explained depending upon minor differences, but clinically we see it in a nodular, infiltrating, and ulcerative form.

Symptoms.—A typical case of nodular lupus begins on the face, especially the cheek and nose, and nearly always in a child. In a cheek case there appear at the commencement one,

* *Literature.*—Author's Atlas, Plates LX. and LXI., show nodular form, and some of figures of Plates LXII. and LXIII. show ulcerative varieties. St. Louis Atlas, Plate I., and Syd. Soc., Plates III., VI., and VIII., ulcerating lupus copied from Hebra's Atlas. Leloir, "La Scrofulo-Tuberculose," 1892. A valuable monograph, with numerous illustrations of interesting cases.

or, if several, then grouped pin's-point to pin's-head-sized spots, of a dull red color, which, according to the depth of the little mass in the cutis, are depressed below, level with, or slightly raised above the normal skin, and pale, but do not disappear on pressure. These spots gradually develop to small nodules, which have a semi-translucent aspect under the stretched epidermis, and a brownish hue, so that the appearance of the nodule has been aptly compared by Hutchinson * to "apple jelly." After a variable time, more often years than months, the groups of nodules coalesce by individual extension into a dull red patch or patches, distinctly raised above the surface, soft and elastic to the touch in the center, but firmer at the edge, which is more raised and more or less nodular and still translucent. By this time there is generally more or less scaliness present, but not enough to obscure the ground color of the infiltration, which goes on slowly extending at the edge, or more commonly by the formation of fresh nodules, which, as they enlarge, merge into the major patch.

There is usually only one focus of disease, but when there are several patches, on one or both sides of the face, the disease is seldom symmetrical,† except when it begins on the nose, and spreads equally on both sides, and then it may assume the same shape as L. erythematosus. When the skin of the nose is affected, the whole thickness of the soft tissues may be involved as well; and then, as in all cases when it attacks the mucous orifices, ulceration occurs, but, owing to the fungating granulations covered with brownish crusts, although swollen, the general outline of the nose is long preserved, and it is not until these granulations are removed that the amount of de-

* Hutchinson used the term "Lupus" in a very wide sense. His special views are set forth in the Harveian Lectures for 1887, published in *Brit. Med. Jour.*, vol. i., 1888; also Post-Graduate Lectures, *ibid.*, vol. i., 1891. His smaller Atlas contains many interesting plates of lupus, as he regards the diseases he includes under that term, viz., anything which scars and spreads especially by what he calls fresh satellites, *i. e.*, foci of the disease just beyond the main patch, thus including many non-tubercular diseases.

† In one of my cases the disease was symmetrical on the inner surface of both knees, but contact inoculation was the probable explanation; he had an asymmetrical patch on one thigh. Morris had a case with lupus of the lobes of both ears, probably from inoculation when the ears were pierced.

struction can be fully realized. The disease may ultimately destroy all the anterior soft parts, the cartilages and even the bones dropping out, but the bones are never directly affected; or the infiltrated parts may undergo fatty degeneration and atrophy, leaving a thin eroded edge to the widely opened nostrils; but there may be thickened cicatricial contraction when the disease is removed by surgical measures. The disease does not advance continuously, even in childhood, but has variable periods of improvement, quiescence, or activity, in the last spreading, or ulcerating, or forming new nodules in old scar tissue or at the borders of the infiltration.

In the adult the quiescent period may last for years, but it may break out anew whenever it is subjected to external irritating, or internal depressing influences. During the improvement stage more or less of the central part of the infiltration undergoes disintegration and absorption, and atrophic scarring results, without any external wound at any time. The disease as a whole, however, very seldom gets well spontaneously, the edge nearly always retaining its vitality even when the interior is entirely cicatricial.

The disease is by no means limited to the face. The next most common positions are the limbs, especially below the elbows and knees, the buttocks, the trunk, the mucous membrane of the nose, eye, mouth, larynx, pharynx, vagina, and uterus; but it is nearly always associated with lupus elsewhere, especially on the face. While, however, no part is exempt, many positions, such as the hairy scalp,* the upper eyelids and middle of the forehead, the neck, genitals, palms, and soles are scarcely ever attacked, except by extension from the neighboring regions, but I have once seen the scrotum primarily and exclusively attacked with lupus nodules in a boy of six, and Matthews Duncan described what he called "lupus of the

* A curious case of direct inoculation of tubercle bacilli on the scalp and the production of lupus is recorded by Wolters. A medical student, working with phthisical sputum, scratched frequently a wound on his head, from a duel, and typical L. vulgaris developed there. *Deutsch. Wochensch.*, September 8, 1892.

Neisser had a case of a man of forty in whom a patch appeared on the scalp, probably inoculated by scratching from an old lupus of the arm, *Berlin. med. Wochensch.*, 1895, p. 53.

For N. Walker's views on the so-called ulceration of lupus see Anatomy.

vulva," but the general opinion is that his cases were examples of syphilitic ulceration. It is extremely rare on the scalp,* but in a lady under my care lupus began at the climacteric and extended rapidly over the whole face and scalp.

Great variety of aspect is produced by enlargement of old patches and formation of new ones in their neighborhood, and the presentation of the various stages simultaneously in different parts of the main area of disease. Thus, in one part, is the thin white parchmentlike atrophic cicatrization; in another the destruction is deeper, and a seamed scar is the result; here one part may be still ulcerating and covered with a dirty greenish crust, there the infiltration is quiescent and covered with scales; here new nodules are forming at the periphery, there they are just appearing as small brown specks in the scar tissue, where at any rate the process seemed to have finished.

After absorption of a mass of lupus, the epidermis over the affected area becomes less dense, wrinkled, and more scaly, or even slightly crusted from exudation through a fissure; the exfoliated epidermis is constantly renewed, and ultimately the center, rarely the whole, sinks down below the border, and when the last scales are thrown off the skin is left thin and cicatricial, and ultimately white. When lupus ulcerates the infiltration gradually softens, and breaks down into a pultaceous pus, which dries up into a greenish dirty-looking crust. This, when removed, exposes a freely suppurating ulcer, which subsequently granulates freely and exuberantly.

Great stress used to be laid on the difference between suppurating and non-suppurating lupus—L. exedens or L. non-exedens, as it was called. In lupus of the scrofulous more or less suppuration is the rule, the ulcerative process being the predominant feature, and the brownish-red infiltration inconspicuous; but even the more quiescent nodular lupus will ulcerate if irritated, or if at the border of a mucous orifice, such as the mouth or nose.

Variations.—These depend chiefly upon the extent and position of the lesions, the constitution of the patient attacked, the amount of infiltration, its rate and mode of progress, its greater or less tendency to ulcerate or atrophy, and the complications which may arise. The number of foci may be very great; thus,

* Ulcerating Lupus (L. Exedens).

in one of my cases, a boy of ten, there were forty-seven patches from a millet seed to a shilling, scattered over the whole body, viz., twelve on the face, one on the neck, seven on the trunk, and twenty-seven on the limbs. They were nearly symmetrical on the face, and showed very little tendency to spread in nearly three years. As usual they came out all together after measles; but in another case, which did not begin until he was twenty-nine,* patches on the face and limbs came out at intervals spread over eight years. When along with multiplicity there is a decided tendency to spread, and the disease has lasted many years, a very large part,† or nearly the whole body surface, may be involved, but such cases are very rare. On the other hand, in a few instances, it may be scattered irregularly in small patches over one region; thus, in a boy, it followed on herpes of the ophthalmic division of the fifth, being limited to the site of the vesicles. Kaposi has met with a similar case in a man. Such cases, which are most frequent on the face, are well entitled to the term **L. disseminatus,** which is used for any cases with multiple patches, while **L. serpiginosus** is applied to cases where two or more circular patches have coalesced into a gyrate form, and enlarge at the margin as new nodules develop near it, and coalesce with each other and the parent patch. This occurs chiefly on the neck and extremities, and is sometimes a severe form from its rapid spreading. Such cases may be considered as examples of **acute lupus.** The process is attended with great hyperemia and heat of the skin, and such cases, if they do not break down spontaneously, do so on very small provocation, especially if the treatment is of at all an irritating character, and they recur very rapidly after scraping.

L. hypertrophicus is applied to cases where solid lymphatic edema is associated with the visible lupus infiltration, such as may be often seen in the upper lip, or where there is exuberant infiltration, much raised at the margin above the normal skin, but generally depressed in the center, as is often seen on the buttock, but it may occur elsewhere. Thus Angier records an enormous growth of the lobe and lower half of the ear of a

* Author's Atlas, Plate LXI., Fig. 1.

† See Plates LXVII., LXVIII., LXXVI., and LXXVII., Hutchinson's smaller Atlas.

woman. To conceal the deformity she bound it to her head, and nodules developed at the points of contact on the scalp.

The result of central involution with the retention of activity at the border is the formation of rings **(Lupus annularis),*** which may enlarge in area while the outer ring may not alter in thickness. In strumous subjects the border may ulcerate and crust, and this is the most common circinate form, but occasionally the same process may be seen in nodular lupus, and when there are several rings difficulties in diagnosis may arise.

L. vulgaris fibromatosus. Fibroid lupus is the name applied by Unna and his followers to cases in which a good deal of the inflammatory process at the base, and round the lupus patch, becomes organized into fibrous tissue. Such cases are very dense and hard to the touch; they may appear like ordinary nodular lupus, but resist both the curette and tuberculin, which make but little impression on them. It may also be met with as part of the so-called hypertrophic lupus. It is most common on the buttocks; much less so on the face. In a girl of twenty-two the disease began when she was seventeen, on the back of the neck, and subsequently the nose, cheeks, forehead and orbit, the right ear, hand and arm, occiput and palate. On the face they were brownish-red, semi-translucent nodules which had coalesced into patches. Most of the lesions came out simultaneously. There was slight ulceration about some of them. The new tuberculin was thoroughly tried on her, but the effect was trifling. She was then scraped, but the base of the patches was very resistant to the curette, and could not be entirely removed, so it was scarified, and pure carbolic acid applied, and great improvement resulted in a month. Subsequently the Finsen light treatment was thoroughly tried without any improvement.

In adults, very rarely in children, the infiltration is very slightly or not at all nodular, but in plaques slightly raised above the surface, and more so at the border than the center. The color is red, with slightly brownish tint, but is not translucent, like ordinary lupus nodules. There may be only one

* Author's Atlas, Plate LXII., Fig. 1; G. S. Elliot's case also, *Amer. Jour. Cut. Dis.*, vol. xiv. (1896), p. 476, presenting unusual features.

patch or more, and in some cases, especially if the disease is bilateral, it is a little difficult to say whether it is a L. vulgaris or a L. erythematosus. Leloir * described a **L. vulgaris erythematodes,** which closely resembles L. erythematosus; inoculation of guinea-pigs with some of the tissue produced tuberculosis, and tubercle bacilli were found in the tissue. In some parts the lesions histologically resembled L. vulgaris, while in others they were clinically like L. erythematosus. Leloir says that it may take the butterfly shape on the nose and cheeks or be unilateral, is often covered with telangiectic vessels, and may be slightly scaly. By stretching the skin nodules can sometimes be seen imbedded; it may invade both the scalp by the nucha and the mucous membrane of the mouth.

Complications.—On the limbs secondary inflammatory accidents are more liable to occur, but not till after some years' duration of the disease. Among these may be mentioned subcutaneous nodes, which after a time are adherent to the skin on the one hand and the periosteum on the other; abscesses, periostitis, osteitis, caries, and necrosis occasionally occur, and the bones of the forearm and leg, and also those of the hands and toes, may become indurated and thickened, while more or less crippling of the joints may supervene from cicatricial atrophy of the skin and adhesion of tendons; such conditions would rarely occur except in those who were markedly strumous, and are not the direct effects of lupus. Erysipelas and lymphangitis are liable to occur at any time, and all these inflammatory complications may eventually, by the consequent obstruction to the lymphatic and blood flow, lead to elephantiasis of the legs, but very rarely of the arms. In Fischer's case, dermatolytic tumors formed on the thighs from similar causes. When erysipelas occurs on the face, chiefly as a sequel to the use of caustics, great improvement to the lupus often results, as I have several times witnessed. On the other hand, some of the cases of acute lupus before mentioned get attacks of recurrent lymphangitis, which, if not actually erysipelas, are indistinguishable from it, except that they seem to lead to ex-

* *Jour. des Mal. Cutanées*, May number, vol. iii., 1891. Hardaway has published an interesting case which resembled the two diseases very closely, *Trans. of Seventeenth Annual Meeting of Amer. Derm. Assoc.*, September, 1893.

tension of the disease instead of its involution. Kaposi has called it *erysipelas perstans*, but it is now regarded as a tuberculous lymphangitis, and may be the sole manifestation of tuberculous infection.

Besides the complications described in lupus of the limbs in strumous subjects, enlargement, caseation, and suppuration of the glands in the neighborhood of the face may occur, and even chronic enlargement of the parotid. Leloir has shown that this lymphatic enlargement is often a real infection with tubercle bacilli, and not merely swelling, the result of irritation. The red lines often seen leading from the lupus patch after tuberculin injections are also to be regarded as evidence of lymphatic infection.

Lupus papillomatosus * is not a true variety of lupus. Papillomatous outgrowth occurs as a complication of any chronic ulceration, but when not associated with tuberculosis is not called lupus. It is probably a product of pus cocci rather than of tubercle bacilli. In this condition papillary growths of granulation tissue, not true papillomata, are produced, and are usually covered with thick yellowish or greenish crusts. When these are removed the papillary easily bleeding growths are exposed. The extremities, especially the backs of the hands and feet, and buttocks are favorite positions for it, but an extreme development on the face is recorded by Morrow.† Possibly it was really Plastomycosis.

Elephantiasis may complicate lupus when the infiltration blocks the lymphatic circulation. It is, in fact, a further development of L. hypertrophicus.

Epithelioma is another more serious complication in lupus of long standing, which occurs in two per cent. of the cases (Leloir). It may develop in the lupus scar tissue, but it rarely, if ever, attacks the lupus tissue in my opinion. If on the face, it may penetrate into the mouth, but in whatever position the

* Author's Atlas, Plates LXII., Fig. 2, and LXIII., Fig. 3, and Hutchinson's smaller Atlas, Plate LXXIX.

† *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vi. (1888), pp. 361 and 401, "Tuberculosis Papillomatosa Cutis, and the Relation of Papilloma to Syphilis, Lupus, etc.," with colored plate; and in Morrow's Atlas, Plate LYXII.

life of the patient can only be saved by early and wide removal. It may be either fungating or ulcerating, and is said to occur chiefly in women. In a man, æt. twenty-nine, the lupus had existed for twenty years, extending over a large part of the face, and over the right lower jaw an epitheliomatous growth the size of half a plum had developed three months before I saw him. The growth was freely removed by my colleague, Mr. Pollard, and six years afterwards another smaller growth formed lower down. This was also removed in 1896, I believe without recurrence. I have had another equally successful male case with no recurrence since June, 1894. The early development is not unusual. Bayha * noted four cases out of the forty-two he collected, and only one out of ten appeared to be cured after excision, the others recurring with fearful malignity, for lupus tissue seems to favor the rapid spread of the disease. Probably these cases either did not come under observation sufficiently early, or the removal was not wide enough. In a case of Audry's it supervened on a lupus of the bucco-pharyngeal mucous membrane, and of course nothing could be done.

Among general complications may be mentioned, in addition to scrofula, chlorosis, emaciation, and phthisis, the last chiefly where the skin lesion is very extensive. Lespinnes,† from observation of four cases in Leloir's clinic, describes a complication which occurs sometimes in ulcerating lupus just before it breaks down. There is a sudden rise of temperature, immediately followed by prostration of a typhoid character. There are gastro-intestinal and bronchial catarrh, and even endocarditis or other serous inflammation. All these symptoms come on simultaneously and resemble those produced by tuberculin injections. Leloir therefore inclines to the belief that the symptoms are due to the absorption of similar products of bacillary action, and antiseptic local applications have been followed by

* Much of Bayha's monograph is reproduced, with additional cases, illustrations, and remarks, in Hutchinson's *Archives of Surgery*, vol. ii. p. 138. See also Bidault's "Thèse de Lille," 1886, and Karpinski's of Greifswald, 1891. My case was published in my Atlas, Plate LX. In *Archiv f. Derm u. Syph.*, vol. lvii. (1901), p. 193, Ashihara gives a very complete survey and bibliography. Naegeli, in Virchow's *Archiv*, bd. cxlviii., gives forty-nine references.

† *Jour. des Mal. Cutanées*, vol. iii. (1891), p. 531.

rapid subsidence of the symptoms in most cases, but general tuberculosis has resulted or permanent organic disease of the heart been left. Fortunately this complication is very rare.

Lupus and other forms of tuberculosis of the skin may be complicated by syphilis. No law can be laid down as to what will be the result of this mixed infection. Some cases of malignant syphilis have occurred in tubercular subjects, but it has also attacked apparently robust persons. In a case of Petrini de Galatz with lupus of the face and buttocks, the syphilid took the form of the small follicular syphilid, which is so like lichen scrofulosorum, but this was probably only a coincidence. In a case reported by Etienne the tuberculosis supervened on syphilis, the result was a general and enormous adenopathy. In Neisser's case of lupus and tubero-serpiginous syphilid the chief interest lay in the diagnosis. Walter Smith * met with a curious combination of symptoms in a girl of eighteen previously healthy. Pulpy nodosities appeared first on the fingers, then psoriasis-like eruption on the body, which left scars; on the tip of the nose was undoubted ordinary nodular lupus which ulcerated; symmetrical exostoses on nose and fingers. He regarded all the symptoms as tubercular manifestations.

Mucous Membranes.—When it attacks the mucous membranes it begins near external orifices, and generally by extension of the disease from the neighboring skin, or it is at all events associated with skin lesions; but it may be primary, and I have once seen it beginning on the gum of a strumous child of two years old with no lupus elsewhere. Max Bender collected 380 cases of lupus from Doutrelepont's clinic, and found the mucous membranes involved in 173, or 45.5 per cent., but in only 6 were the mucous membranes alone affected. He found, however, that the disease had commenced in the mucous membranes in 31 per cent.; this is far more than is usually supposed. The mucous membrane of the nose was affected in 115 cases, of the lips in 43, of the palate in 31, the nasal duct in 24, the conjunctiva in 21, the larynx in 13, the tongue in 1, the rectum and vulva in 1. Audry goes much farther than this. He had all cases of face lupus examined, and in every instance there were deep lesions of the nasal mucous membranes, and he came to the conclusion that the nasal mucous membrane was the

* *Brit. Jour. Derm.*, vol. ix. (1897), p. 187.

starting point for the immense majority of cases of lupus of the face.

Its effects on the nose have been already described; on the mouth, extending inwards from the lips, granulating sores form on the inner side of the lips and on the gums, and generally project over the upper incisors; papillary growths are more frequent here than elsewhere and separate the gums from the teeth; stomatitis is present more or less, and produces the superficial grayish patches, similar to those so often seen in syphilitics. In a few cases, of which I have seen one, lymphangiectodes of the mouth * has occurred with L. vulgaris of the skin. Punched-out ulcers on the hard palate are common, but caries of the bones never ensues. The soft palate and pharynx may be notably affected as in tertiary syphilis, but adhesion of the soft palate to the pharynx is less common than in syphilis, the lesions of which, in other respects, the cicatrices closely resemble. Spontaneous healing may occur sometimes, but only after many years. The tongue is very rarely involved; in Leloir's case † it presented a verrucose condition. In the larynx it may affect the epiglottis extending from the buccal cavity, thence to the aryteno-epiglottidean folds, and to the other points of the larynx, and may affect the voice in various degrees; but no danger to life need be apprehended, nor any destruction of cartilages; in rare instances it is primary in this part. It is occasionally primary on the conjunctiva, or it may have spread from the lachrymal duct or from the cheek on to the inside of the lower lid, and thence on to the eye, where it forms granulations and extends like a pannus over the cornea, and may completely cover it. In the ear it may spread along the external meatus up to the membrana tympani, which may be destroyed, and after various anomalies of hearing, fungating tumors may develop on the meatus and occlude it; it is, however, very rare for the internal ear to be involved, which is reached by extension along the Eustachian tube. Cases have been reported of its existence in the uterus and vagina.

Etiology.—Lupus is much more common in females than males—two to one is the accepted ratio in England, though, in

* Author's Atlas, Plate LXXIV., Fig. 5.
† International Atlas, Plate III.

my experience, four to one would be nearer the mark. It seldom begins before three years of age, though C. Fox met with five cases in the first year of life. It is said to rarely begin after puberty, but it is by no means so rare as is usually stated, and one of the worst cases I have seen was a case of undoubted nodular lupus vulgaris, which began on the forehead of a lady when she was forty-six years old, and spread over the whole face, scalp, and part of the neck. There were also a few small foci on the limbs, but here it showed very little tendency to spread. Active interference only made it spread more rapidly. Her general health was good, and there was no evidence of phthisis or struma in herself or her family. Dr. Campbell Pope sent me a man in whom it began at sixty-three, and the patches multiplied until in three years there were twenty-one on the face and trunk. The patient was otherwise apparently healthy. I have also seen it in a lady, commencing when she was sixty-three. Although much more common among the poor, no class is exempt, but its frequency varies in different countries. It is more common on the Continent than in Great Britain, and almost rare in North America. While the patient is the subject of phthisis in a moderate number (eight in thirty-eight of Besnier's cases), I have been astonished, since I have inquired into it, at the large proportion of cases in which a history of phthisis in one or more members of the family is obtainable; Hutchinson has made a similar observation. This does not hold good for America; according to Nevins Hyde of Chicago, in eighteen cases where the family history was obtainable, in only one was there a distinct phthisical history. The general health may be good, bad, or indifferent, but C. Fox * found that one-third of his cases had glandular enlargement, fifteen per cent. had scrofulo-gummata, and eight per cent. joint or bone disease, and true L. vulgaris started in different instances in caseating glands, diseased bone, and scrofulous gummata.

While the majority of cases of direct inoculation of tubercle bacilli take the form of ulcers or L. verrucosus, which is *par excellence* "inoculation lupus," there is no doubt that nodular L. vulgaris also may arise occasionally from direct inoculation.†

* *Westminster Hospital Report*, 1893.

† W. Dubreuilh and Auche collected sixty cases of cutaneous inocula-

In Lipp's case the lupus was supposed to have arisen from the consumptive mother kissing the child's face on which there were rhagades.* Jadassohn met with a case in which a butcher inoculated his finger with a tuberculous ulcer from an ox, and true lupus appeared higher up the arm; he relates another case which arose on the tattooed surface of a woman's arm—the ink was moistened with the operator's saliva.

Dent records three cases in one family; they had all occupied the same bedroom, and two had slept together. I have had a case of a boy who had large symmetrical patches of lupus on the inner side of each knee, and auto-inoculation was probable. Clement Lucas relates the case of an attendant on a lady who had lupus, who was herself attacked with it on her nose; also of a Jewish infant, where it appeared on the penis after ritual circumcision. Many instances of this are on record, the operator having been phthisical, but it is seldom that the result was a true nodular lupus. Thus, in a group of nine cases at Yalta from this cause, they nearly all had ulceration of the cicatrix four or five weeks after the operation; one had lymphangitis, two died of consecutive pulmonary tuberculosis. Lucas' case of L. verrucosus, developing on the hand from having received a tooth wound on the fist, also illustrates the rule. Nevertheless, L. vulgaris of the lobes of the ears from piercing the ears has been several times recorded, Wolters' case from inoculating bacilli from sputum (footnote, p. 764) was said to be typical; and Corlett also had a case where the lesion began as a plaque on the forehead, then ulcerated, and the ulceration spread all over the face. L. vulgaris is seen occasionally in vaccination scars (see p. 525), herpes zoster scars, and those following an injury. Thus, in a woman of twenty-three, lupus developed on the scar of a cut on the nose, beginning very soon after the wound healed. Previous inflammation may favor the development and determine the position of the disease. All these modes are only the open door by which the tubercle bacillus gets in. Experimental corroboration of these sug-

tion of tuberculosis. Abs. *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 95.

* At U. C. H., 1900, No. 74, a child of two-and-half of healthy stock was brought with a pin's-head spot of lupus on the cheek. She was often kissed by a woman who died of phthisis in the hospital.

gestive clinical facts has been furnished by Leloir,* who, by taking large pieces of lupus tissue and placing them, with due precautions against error, in the peritoneal cavity of guinea-pigs, produced general tuberculosis. Leloir said lupus is probably produced:

I. By direct inoculation from without. II. Indirect inoculation by continuity from deep tuberculous foci. III. Inoculation by way of the lymphatics or veins passing through a tuberculous focus more or less remote. IV. Infection of hematic origin. V. Infection in utero. Methods I. and II. are most frequent, while V. is extremely rare, but a case recorded by Sabouraud lends support to the possibility of it. A child of a phthisical mother died when eleven days old, and abundant miliary tubercle was found in the liver and spleen, the only organs examined.

The form which a tuberculosis of the skin takes is largely determined by: 1. The mode of invasion of the skin, *i. e.*, from within, when it is more likely to be nodular, or without, when it will probably be verrucose or ulcerative. 2. Possibly the number of the bacilli inoculated and whether it is with or without pus cocci, although the suppositions fall short of proof. 3. The kind of soil or constitutional proclivities of the individual. Thus there can be no doubt that the so-called scrofulous predisposition very much favors the early suppuration and ulceration of the lupus. The scrofulous person is also much more likely to have caseating glands, and secondary lymphangitis, etc. A purely nodular lupus often occurs in an otherwise healthy person, and shows little tendency to ulcerate, and in some cases, not much to spread.

Although lupus is often aggravated by exposure to cold, and is generally worse in winter, there is no reason to believe that it directly excites it.

Multiple lupus very frequently follows specific fevers, especially measles; tuberculous glands probably soften under its toxin, setting free the bacilli into the circulation.

Thibierge records a case in which a quiescent lupus scar with some nodules was awakened to activity in thirteen pregnancies and during lactation, and then subsided until the next preg-

* See also Eve's "Experiments on the Rabbit," *Path. Trans.*, vol. xxxix. (1888), p. 363.

nancy. Other instances of activity during pregnancy and lactation are on record, but the effect is not constant, some cases having improved during pregnancy and got bad again afterwards.

Pathology.—The lesions of lupus are due to a neoplasm of the granuloma class, consisting of a small cell infiltration which begins first in the deep part of the corium, and from thence gradually invades all the other skin structures. The cause of the process is now generally regarded as the irritative presence of tubercle bacilli. Koch first demonstrated the presence of bacilli, indistinguishable from tubercle bacilli, in lupus tissue, and the view that lupus is a chronic tuberculosis of the skin was greedily taken up, though Kaposi, Schwimmer, and some others strongly opposed such a theory. The bacilli exist in such very small numbers, one or two in a section perhaps, that they are often only to be found by careful examination of a large number of sections taken from the border of the growth. Cornil and Leloir, in a large number of sections taken from twelve cases, found only a single bacillus in a cell, and that from a case in which phthisis was present. It is strange that so much damage should arise from such a sparse distribution; but this may arise partly from the bacilli having perished in the older lupus tissue, though they are scanty even in the growing edge. In addition to the bacilli, all structures that are found in miliary tubercle are present in lupus, and these are particularly abundant in L. papillomatosus. Further confirmation that lupus is a tuberculosis of the skin is found in the violent local and general reaction to injections of the old tuberculin. It is, however, certainly at most a local tuberculosis, without any tendency to generalize.

Anatomy.—This has been investigated by Virchow, Auspitz, Kaposi, and a host of more modern observers. Although the modern nomenclature and interpretation are somewhat different, the cells being called plasma (Unna),* epithelioid, etc., the description of Kaposi is still one of

* Unna's "Histopathology," p. 574, contains an elaborate description of this interpretation of the histology of lupus. *Plasma cells* (Unna) are more or less round, oval, or angular in shape, with a round nucleus generally situated eccentrically. Their protoplasm is granular (granoplasma), and their nucleus contains, in addition to a nucleolus and a chromatin network, some five or more coarse granules arranged about the periphery. These details are brought out by special staining methods: polychrome,

the best accounts, and as it agrees with my own observations, it is that mainly followed here. Taking first a single recent general nodule, it is found imbedded in the deeper part of the corium, sharply defined from the rest of the cutis, and bounded by a dense fibrous tissue, the skin structures above the nodule remaining healthy.

The nodule has a framework consisting of a delicate fibrous reticulum with abundant vessels, the larger meshes of which are filled with round

Fig. 41.—Lupus vulgaris from nates. 2-in. oc. $\frac{2}{3}$-in., obj. w. a.

a, thickened rete mucosum ; *b*, *b*, *b*, round-cell infiltration separating fibers of corium ; *c*, blood-vessel ; *d*, *d*, nodules.

cells, with sharply defined, strongly staining nuclei, while the small meshes contain also some smaller cells, and many free nuclei. Giant cells are also present in varying numbers, but their importance has diminished, since they are now known not to be characteristic of tubercle, as

methyl-blue and glycerin ether (Unna), or methyl-green-pyronine and resorcin (Pappenheim). [Abs. of good paper by Pappenheim, etc., in *Brit. Jour. Derm.*, vol. xiv. (1902) p. 147.] According to Unna and his followers, these plasma cells originate from fixed connective tissue cells (histiogenetic), but von Marschalko and others contend they are derived from the lymphocytes of the blood (hematogenetic). Plasma cells occur in lupus vulgaris, syphilids, etc.

they were thought to be when Friedländer, previous to Koch's discovery, advanced the theory, founded on their presence in lupus tissue, that it was a tuberculosis of the skin.

As the cells in the center of the nodules increase in numbers, the vascular supply is interfered with, and fatty degeneration and disintegration ensue in that part, and by extension of this necrobiosis, ultimately nearly the whole nodule is absorbed or ulcerates, though at the periphery the new products may, according to Lang and Kaposi, organize into connective tissue and cicatrize, differing in this respect from leprosy and syphilis.

When this fibroid formation is highly developed it produces what Norman Walker calls fibroid lupus.

When the foci are numerous, as they generally are, they extend peripherally in the course of the vessels, coalesce, and gradually involve the

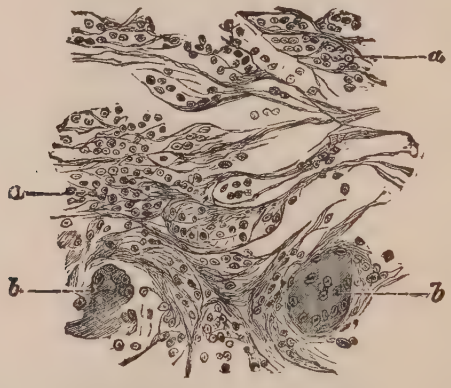


Fig. 42.—Lupus vulgaris from same section as Fig. 33. $\frac{1}{6}$ obj. Powell, 2-in. oc. *a*, fibro-cellular reticulum ; *b*, *b*, multi-nucleated giant cells.

whole corium of the region affected. In the epidermis, which soon becomes affected, the rete cells undergo proliferation and fatty degeneration ; there is downgrowth of the interpapillary processes on the one hand, and encroachment of the lupus infiltration in some parts on the other, obliterating the boundary line between the palisade stratum of the rete and the papillary layer of the corium. More or less desquamation occurs, and by this means, or by suppuration, the lupus infiltration is laid bare and ulcerates. Norman Walker disputes the justice of calling the process ulceration, as he says the surface is always more or less covered with epithelium, though often swollen and distorted, and he therefore wishes to substitute the word catarrhal, as it is comparable to the lung process. Although there is a certain amount of truth in this, the term chosen is not an acceptable one, and suppurative lupus is truthful and less objectionable.

Similar changes occur in the epithelia of the sweat and sebaceous glands and hair follicles; hence ensue atrophy of the papilla, falling out

of the hair, occlusion of the gland ducts, and consequent retention of secretion, so that milium-like bodies are imbedded here and there in the corium. According to Lang, Stilling, and Jarisch, the reticulum, the vessels, and part of the infiltration are formed by proliferation of the cells of the vessel walls and lymph channels, and consequent outgrowths from them, while the rest of the infiltration consists of emigrant cells from the vessels. As occasional features may be mentioned general hyperplasia of the whole of the tissues, resulting in elephantiasis, or the papillæ alone may enlarge enormously, and a verrucose condition be produced. Sometimes the epithelial proliferation is the striking feature, and that of the rete, follicle, and sweat glands may coalesce, and form a sort of network, permeating the lupus infiltration. It is in such cases that epithelioma may develop.

Diagnosis.—The diagnosis is easy when "apple jelly" nodules imbedded in the skin are present, or raised above it; when there are one or more inflammatory-looking infiltrations, more or less raised above the surface, moderately scaly, with a well-defined edge, and perhaps some of the aforesaid nodules near it; when with this there is more or less scarring, either atrophic or ulcerative, the latter chiefly where the skin and mucous membrane join; when, too, in such cases the disease runs an extremely indolent course and occurs in a child or young person, or if in an adult, the disease dates from childhood.

Use of Glass Pressure.—In a very early stage, when there is only a single nodule deep in the skin, or in a slight recurrence in a scar, lupus can be distinguished from an inflammtaory papule by pressing on it with glass, when an inflammatory lesion is quite obliterated, while a lupus nodule with the blood squeezed out leaves a yellow spot still visible through the glass.

Whenever there is scarring present, with an infiltrating eruption, the diagnosis in a young, or at all events not elderly person, practically lies between three diseases, viz., lupus, scrofuloderma, and gummatous infiltration from syphilis, leprosy being too rare in this country to need much discussion.

In a *gummatous syphilid* the disease almost always is acquired in adult life, ulcerates readily, spontaneously, and often deeply, with a sharp edge, and runs a comparatively rapid course, doing more damage in a few weeks or months than lupus will produce in as many years. In lupus the disease generally begins in early life, runs a very slow course, and ulcerates only on provocation or when near a mucous membrane, and then

superficially, and generally with a rounded edge; the secretion is scanty and inoffensive, the crusts thin and brownish, except in strumous subjects. Then lupus never implicates the bones of the face,* while syphilis often does, and the crusts in the latter are abundant and greenish, and the secretion offensive.

Corroborative evidence of past or present syphilis is nearly always obtainable on the one hand, while this is negative in lupus. If, after taking everything into consideration, doubt still remains, a tentative treatment with iodid of potassium and mercury for a week or two will decide the matter, marked improvement resulting in syphilis, while lupus is unaffected, or only to a slight degree.

In *scrofulodermia* caseous glands, or the scars left by them, are present, and the disease consists in a chronic dermatitis spreading from the softened glands; there is more or less ulceration, probably sinuses, and soft red undermined skin, but no translucent brownish tubercles in or near the infiltration, and there is probably other evidence of the so-called strumous diathesis. With such symptoms present the diagnosis is easy; but sometimes lupus also starts from caseous glands, or at all events may develop in a notably strumous patient, and the two conditions merge into one another; the diagnosis may therefore be difficult, but is fortunately not then of practical importance, and does not modify the treatment.

In *leprosy* it is only when the disease is in an early stage that any difficulty could arise. If there were any anesthesia present, this, with the history of the patient's having been in a leprous district, would at once decide the diagnosis; later on the other characteristic symptoms of leprosy would be present.

Some cases of multiple lupus of the limbs, where the disease has involuted in the center and left rings, are remarkably like the early stage of some maculo-anesthetic cases of leprosy without any other symptom. Leprosy may also begin as rings of the same color and elevation with an atrophically cicatricial center. In the latter, however, there is always partial anesthesia in the center, sometimes preceded by hyperesthesia, but the difficulty lies in the fact that the dysesthesia is not always

* They sometimes fall out from want of support by the destroyed soft tissues.

pronounced, and with a very young or nervous patient, statements on relative sensibility of parts are not reliable. Possibly assistance might be obtained from the enlargement of the rings of the lepra being much more rapid. All doubt would be removed as the leprosy developed further, and difficulties would only arise when the patient had lived in a leprosy district.

Psoriasis.—A few cases closely resemble psoriasis. The infiltration is greater in lupus, the scaling less, and not in silvery crusts, the patches are comparatively stationary. Search may reveal more typical lupus patches, and there is more or less scarring in an old lupus patch, a feature which is infinitely rare in psoriasis. In a patient of mine, a man of forty-five, there was a four-inch patch on the chest which had been forming for twenty years, very slowly enlarging; it had been repeatedly treated for psoriasis. There were several smaller and more recent lesions, one above the clavicle showed typical lupus nodules.

Lupus sometimes closely resembles *squamous eczema.* The length of time that the lupus has existed in a very limited area, its sharply defined and raised border, the greater amount of infiltration of the skin, its having been dry throughout its course, while it has not varied in intensity to a notable extent, and its tendency to scar formation, are all points in which it contrasts with an eczema patch.

In people past middle age *epithelioma* might be confounded with lupus. The age at which the disease began, the position of epithelioma, its painfulness, its limitation to a small area, the induration round the infiltration or ulcer, are all points of distinction. The depth of the ulcer also is usually greater, the edge raised, everted, and hard, the surface uneven, and the more rapid progress and the involvement of neighboring glands mark the malignant form of disease. The occasional supervention of epithelioma on lupus of long standing has already been mentioned. For the distinction from *rodent ulcer* see that disease.

L. erythematosus is distinguished from L. vulgaris by the more superficial and less raised character of the eruption, the absence of ulceration, and the absence of nodules or papules in or near the patch; moreover, it nearly always begins much later than vulgaris, and is often symmetrical. It generally pro-

gresses more rapidly than L. vulgaris, and the sebaceous glands are often conspicuously involved in erythematous lupus, but not in L. vulgaris. As has been stated already, however, the differences in some cases are by no means striking, and careful consideration of every point is required.

In cases of doubt, where the diagnosis is important, Koch's old tuberculin injections may be employed; whatever its shortcomings as a curative treatment, there is no doubt that it may sometimes prove a valuable aid in diagnosis.* Two milligrams (.002) may be first tried, and then .005 or even .01 employed, and the smaller the dose which produces local and general reaction the more strongly would it speak for L. vulgaris; a full dose like .01 may produce slight local reaction in a L. erythematosus, but not in syphilis, rodent ulcer, or epithelioma. It is not of any discriminating service in lepra or scrofuloderma; from the latter, however, the diagnosis is of more academic than practical importance, and lepra may react to it so violently that if this disease is suspected it should not be employed.

When the disease is reduced to a few nodules, doubts occasionally arise as to whether a red spot is a lupus nodule or not; in such cases, glass pressure (diascopy or phaneroscopy), as recommended by Liebreich and Unna, may be employed. The blood is pressed out of the vessels, and an inflammatory spot would disappear entirely, while a brownish dot would still be left in a lupus nodule. In rare instances it might help a decision in a very early lupus spot. A watch glass or a large convex lens is a convenient means of applying the method, but a pleximeter-shaped instrument of glass is sold for the purpose. Unna claims that nodules in scar tissue which cannot be seen in the ordinary way may be brought into view by painting the skin with carbolic acid, which makes it transparent. Oil of cloves or camphor chloral is added to mitigate the pain of the application. Injections of old tuberculin reveal the nodules even more effectually.

* The above appeared in the second edition of this work. More recently (January 1900), Neisser emphasizes and strongly recommends the old tuberculin both for diagnosis and treatment in suitable cases. McCall Anderson corroborates from his own experience in the *Lancet*, June 16, 1900, p. 1703.

Prognosis.—This depends on the age of the patient, the extent and duration of the disease, especially with regard to multiple foci, and the amount and character of the treatment. It is always a chronic, obstinate disease, tending to recur again and again, after apparent complete removal, but, when of limited area, complete cure may be effected by perseverance; the older the patient the better is the chance of permanent removal, durable cures in childhood being of very rare occurrence, unless the diseased area is of sufficiently limited extent, and in such a position that excision or other radical measure can be employed.

Treatment.—While no internal treatment alone can be relied on for removing a lupus patch, much may be done to retard the progress of the disease, and favor involution rather than ulceration, also to delay, and even sometimes to prevent, the recurrence after the removal of the infiltration by local means.

The only agent which has a direct effect on lupus tissue when given by the mouth is thyroid extract, or its derivatives, first suggested by Byrom Bramwell, and it is in my opinion the most important adjuvant to surgical or other local means that we possess. It should be given after as much as possible of the disease has been removed by local measures, beginning with five grains of the dried gland. Tabloids are generally the most convenient form; after a fortnight ten grains of the gland may be given, and if the patient is tolerant, in another fortnight it may be raised to fifteen grains per diem.

As it has to be given for a long period, a year or more, it is not advisable to give more than this, and some patients cannot take more than two tabloids a day. When once tolerance is established it can be taken for years without inconvenience or any symptom except that the patient gets thinner, but apparently only loses superfluous fat. If, however, the dose is too large at first, or a sufficient interval between the increments of the dose is not observed, the patient will be upset, sometimes seriously, with the well-known symptoms of thyroidism.* It may also be given with advantage where the disease is too

*Thyroidism may be induced in sucking infants if the mother is taking the drug. In one of my cases, while there was loss of weight at first, subsequently there was an actual increase. In this case, with a most extensive ulcerating lupus a very large part of the disease healed soundly.

extensive for local interference, or where, from its locality or for other reasons, efficient local treatment cannot be employed. Although I have never seen a cure under it alone, very considerable and striking improvement can often be obtained.

All measures, also, that tend to improve the general health should be adopted; good hygiene, in every sense of the word, as far as it can be secured, should hold a high place, while the patient should be carefully guarded against external irritants, such as cold winds, sudden alterations of temperature, and the like. Coming of a phthisical stock, as so many do in this country, and the not infrequent association with evident struma, cod-liver oil in full doses steadily persevered in, but with occasional intermissions, holds a high place. Iodin, either with the oil in grain doses, three drop doses of the tincture, or the potassium salt, or the syrup of the iodid of iron, is also of value, but only where thyroid is contra-indicated.

Improvement in assimilation is the great aim, and therefore attention must be paid to the condition of the alimentary canal, and a nutritious dietary of easy digestion drawn up when the digestive powers are weak. In proportion as the general health is good, and the patient often seems to be quite robust, is internal treatment of minor importance.

Injection Treatment.—Ordinary internal medication having such a limited scope, men's hopes of a specific being at last discovered were raised to the highest pitch when the marvelous selective effect on lupus tissue of Koch's tuberculin, administered hypodermically, was first demonstrated. Disappointment has been proportionately great, now that it is shown that the good effect is for most cases only temporary; and although the new, or TR. tuberculin, gives similar results without the pains and penalties of the old toxin, the frequent failure to obtain a permanent cure has made most people throw it aside altogether. I am of opinion, however, from considerable experience in its use, that there is still a place for it in lupus therapeutics, although unfortunately a small and subsidiary one. The improvement is greatest in the ulcerative form in the young, and least in the purely nodular form in adults, in which sometimes the effect is only trifling.

The mode of administration is given under Syphilis. More rapid, and I think more permanent, results can be obtained by

local injections, *i. e.*, injecting the fluid close to the lupus patch when that is accessible, and it is sometimes practically the only means of reaching otherwise inaccessible mucous membrane disease. Before commencing local injections the patient's susceptibility should be tested by the minimal general injections.

Another use for it is that after as much lupus tissue as possible has been removed by erasion and the subsequent application of carbolic acid, or other similar application, injections of tuberculin, in the back first, and later locally, appear to remove some of the lupus tissue which could not be reached from without, and thus assists in securing a longer freedom from recurrence and a larger amount of permanent cure.

One thing, however, it will do better than other medical or surgical measures have been able to effect, viz., remove the fibroid thickening * which is so often present when lupus affects the lip or other place where there is lax tissue. The hypertrophic scar tissue of lupus (the lupus fibroma of Unna) may also be flattened down by it, sometimes revealing as it does so lupus nodules hitherto concealed. Thiosinamin and mercurial injections have also been used advantageously for this secondary thickening. While, therefore, tuberculin still has a place in lupus therapeutics, the time, trouble, and expense on the one hand, and the various other means at our disposal encroaching on its domain in various directions on the other, combine to limit its use to a comparatively small sphere of action.

The details of the method of its administration are given in the Appendix of Formulæ (Lupus Therapeutics).

Since tuberculin, injections of other substances have been advocated: cantharidinate of potash by A. Liebreich; chlorid of zinc injections by Lannelongue; thiosinamin by Hans Hebra; dog's serum because of its germicide action on the tubercle bacillus; calomel and perchlorid of mercury injections. None of these, apparently, have come to stay, except, perhaps, the mercurial salts for a small number of cases. Their painfulness would render them inapplicable to children, while the dangers

* A marked example of this was that of a patient of mine treated by my friend Dr. Heron in Victoria Park Hospital for Consumption, when tuberculin first arrived in England. Although the nodular lupus returned, the fibromatous thickening did not do so.

of injecting insoluble salts of mercury are set forth in the treatment for syphilis. While acknowledging their power in absorbing granulation tissue, I should not admit so dangerous a remedy into my armamentarium while less risky treatment is available; soluble salts of mercury are less dangerous. It is probable that the tubercle bacilli are not killed by the mercury.

Local Treatment.—It follows from what has been said that local measures are always necessary, and, as in all obstinate diseases, the number recommended is legion. I propose to mention only those that I have reason to speak well of, and to point out their indications and limitations. They may be classed under surgical, medical, and the light treatment.

The surgical operations are: 1. Excision; 2. Erasion; 3. Scarification; and, 4. The galvano- or Paquelin's cautery.

Excision.—Whenever the position, *e. g.*, the nose, or the extent or multiple foci of the disease do not contra-indicate it, there can be no doubt that excision extending about a quarter of an inch beyond the disease offers the best chance of a radical cure, often in one operation. Where the disease is tolerably recent and is of small extent, the patch may often be excised and primary union of the wound obtained with a linear, and therefore the minimum of scar. Where the position or extent do not allow of this, the wound left may be filled up by Thiersch grafts, or the resources of plastic surgery may be called upon. There is scarcely any limit to the operation on the limbs if there is only one patch, but on the face it may be otherwise, and the patient's consent is often withheld.

Erasion may be used for large surfaces, or where the patient refuses excision, or for awkward positions, such as the orbit and nose. The instruments used are either Volkmann's sharp spoon or the ringed curette (Fig. 43). Except for minute foci I use the curette. The diseased tissue is scraped away at first readily, but the instrument should be used vigorously at the base and edges of the disease, until the resistance of the healthy as compared to the diseased tissue is evident to the touch. In cases of long standing, owing to the diseased tissue, pocketing in the meshes of fibrous tissue at the base, and permeating into the healthy area beyond the visible disease, the result soon after healing is seen to be imperfect, nodules of lupus showing up at once or some time after healing, and vari-

ous supplementary measures are employed both at the time of operation and afterwards to reduce these recurrences to a minimum. At the time of operation the base may be freely scarified, and iodoform or strong carbolic acid applied freely. The action of the latter is superficial, but being liquid it penetrates into interstices, and has the advantage of anesthetizing the wound after the first minute of application. I generally use a bundle of matches tied together and press firmly. The wound heals rapidly with a boric acid ointment, lotions giving so much pain each time they are changed. Anderson recommends rubbing the surface of the wound after erasion with potassa fusa, and after a few seconds neutralizing with dilute acetic acid. Strong sulphuric acid neutralized with bicarbonate of soda is a similar application. Schlapoverski rubs the wound with solid nitrate of silver, and then covers it with collodion and ten per cent. iodoform; a chemical action takes place, and the caustic action is intensified. Chlorid of zinc solution, forty grains to the ounce, swabbed for a moment or two, and pyrogallic acid bandaged on, have also been strongly recommended; but the last three caustics give much pain for several hours after the operation, and I prefer the carbolic acid. The supplementary means after operation are tuberculin injections, or the administration of thyroid extract. The latter is the one I now chiefly use on account of its facility. The patient should be warned that for thorough success the erasion operation must be followed up by attacking the nodules as soon as they appear, otherwise in a year or two the patient will very likely be as bad as before. Each nodule should be scooped out with Vidal's knife, a small scoop, or drilled out with a pointed piece of hard wood dipped in the fuming acid nitrate of mercury, or, if they are very numerous, multiple scarification, after freezing the part with chlorid of ethyl or methyl, may be employed until the number of nodules is reduced. By perseverance in this way, at the same time continuing thyroid extract, very gratifying results may be obtained, and unless the surface is very large, permanent cure often results. Where repeated erasion has been used a seamed scar sometimes results, but this may be improved by time, by the application of mercurial plasters of Vigo, Vidal, or Unna, and by thiosinamin injections in the neighborhood, as described under keloid, or finally by shaving

off the projections with a scalpel and applying Thiersch grafts, or by multiple scarification. There is some ground also for supposing that if the wound is kept aseptic during healing, hypertrophic scarring will be avoided.

Multiple scarification may be carried out with either a scalpel, or preferably a Vidal's knife (Fig. 44), for a small area, or for

Fig. 43.—Curette for scraping lupus.

a larger patch by a sheaf of blades, of which there are several patterns, but Pick's (Fig. 45) is one of the best. The operation can be done under general or local anesthesia, and is suitable for small areas on the face, where a neat smooth thin scar is of the highest importance, and no other operation can compare with it in this respect. It appears to act by dividing large numbers of vessels, and so starving out the neoplasm, but its scope is much limited by the necessity of the repetition of the scarification a large number of times, twenty or thirty or more in

Fig. 44.—Vidal's knife.

some cases. The incisions should be made close to each other, and then another series at right angles, "cross-hatching," as it is called. Increased efficacy is obtained by immediately dabbing the cut surface with carbolic acid. Nodular lupus of the end of the nose and upper lip is often best treated in this way. Not more than three weeks or a month should elapse between the operations in most cases. Multiple scarification may also be used immediately after erasion, at the borders of an acutely ulcerating lupus when erasion is contra-indicated, and to improve a hypertrophied scar.

Multiple Puncture finds its chief advocate in Veiel of Cannstadt, who devised a special instrument to facilitate its performance, which may also be used to supplement scraping. It is inferior as a primary treatment to both scraping and scarification.

The *Galvanic*, or *Paquelin's Cautery*, is used either to totally destroy the new growth, or as a more thorough linear scarification method, and has some strong advocates, notably Besnier and Hutchinson, but it has the disadvantage of burning both sound and unsound skin with equal facility, and the sense of touch in recognizing the difference is unavailable, and a valuable means of thus judging how much to do is lost. Besnier, however, does not admit this. It is, in my practice, lim-

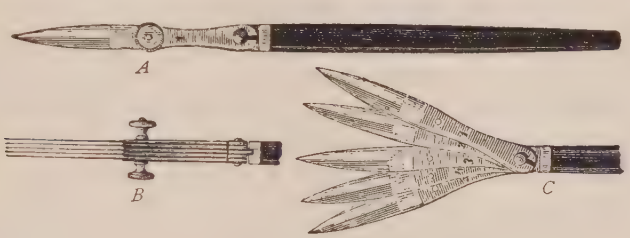


Fig. 45.—Pick's lupus scarifier and multiple puncture instrument. *A*, *B*, closed for use ; *C*, open for cleansing.

ited to recurrent nodules, and to lupus of the mucous membranes, where it is valuable for preventing bleeding.

Lustgarten and Gärtner advocate *Electrolysis*, employing bright plates for the negative electrode, with twenty-four Leclanché cells. Jackson of New York is also in favor of this, but employs a coarse needle instead of a plate for the negative electrode. I have used this last method, independently, for cases where there were only a few recurrent nodules on the face, and for this purpose can speak in favor of the plan.

Phototherapy.—Of recent years the therapeutic effects obtained by exposure to different sources of light have been employed so successfully in lupus treatment that phototherapy bids fair to supersede many of the older methods in a large proportion of cases. They come under Finsen rays and Röntgen rays.

In the Finsen Method sunlight where it is available, or in its absence the electric arc light, is concentrated by means of apparatus which cuts off the heat rays and leaves only the actinic, viz., the blue, violet, and ultra-violet rays to act upon the diseased tissue, from which the blood must be pressed out,

as the red corpuscles in the skin prevent the deep action of the rays.

Finsen's original apparatus was too cumbrous, expensive, and tedious in its application for private use, but the practicability of the method has been much extended by the lamp invented by Lortet and Genoud of Lyons, and its various imitations or modifications. In these the light is not brought to a focus, but the patient is brought close to the light before the rays diverge. By them also the time of exposure has been shortened to a quarter of an hour or so, the patient himself pressing against the rock crystal of the lens chamber to remove the blood from the part instead of a nurse being required. Even this time of exposure may be shortened, Bang of Copenhagen having found that iron electrodes acted more rapidly than carbon ones; but they are said to lack penetrating power, and are not so suitable for lupus as carbon electrodes. Both the Lortet-Genoud and the Bang lamps require a current of cold water through the apparatus, which would otherwise become too hot and burn the patient. Broca and Chatin have invented an apparatus with the positive electrode metallic and the negative of carbon, where no cooling is required, and have an improved method of compression. In fact, modifications are continually being made in these portable lamps, which are worked from the ordinary mains, the continuous current being preferable. It is only necessary, therefore, to indicate the scope and effects of the electric arc treatment, whatever may be the construction of the lamp employed.

The chief advantages are the painlessness of the treatment and its excellent cosmetic effect, the scar being thin, smooth, and uniform, and to these Leredde adds its homogeneity and penetrating power.

The disadvantages are the small area treated at each exposure and hence the long time required, the exposures being usually very numerous, so that in a large area they may run into hundreds.

No effect is seen at first, but after from twelve to forty-eight hours inflammatory action sets in with redness, swelling, and sometimes bullæ, or oozing of the part directly exposed to the rays, and this inflammation is allowed to settle down or subdued with zinc ointment before the exposure is renewed.

The Finsen treatment * is not applicable to lupus of the mucous surfaces or to ulcerating or vegetating lupus, as to apply it successfully the part must be dry and the lens pressed hard against the part. If by radiotherapy or other means, *e. g.*, permanganate of potash, an ulcerating lupus can be dried up, then the Finsen treatment can, if thought desirable, be carried out to the conclusion of the case. Its most successful application is to a dry lupus of the face, in which it cures with the minimum of scar, and when not very extensive, in a moderate number, say fifty to eighty exposures.

On the limbs, surgical methods can generally be employed more rapidly and therefore more advantageously, since the character of the scar is less important. Local injections of tuberculin also have a good place in such cases.

Like all other methods of treatment the cases must be followed up and recurrences dealt with at once, and only on these conditions can permanence of result be obtained, and it is obvious, therefore, that the method is still far from perfect, but time and experience will no doubt lead to further improvements both in technique and apparatus. The Copenhagen school claim to get a deeper action with their original apparatus than with the Lortet-Genoud and similar models, but French workers are not of this opinion. They consider that the depth of action depends chiefly on the compression being sufficient to render the part operated on quite bloodless.

In the Röntgen Rays treatment, or *radiotherapy*, the diseased area is exposed to the rays of a Crookes tube of not less than 6-inch spark gap for ten minutes daily, at 4 to 5 inches from the lamp, with a current of 4 ampères, a jet mercury interrupter, and a 10- or 12-inch coil. The healthy skin is protected by wearing a mask covered with lead foil, from which a piece is cut out corresponding with the diseased area; after six to twenty exposures inflammatory reaction is set up, when pronounced closely resembling that produced by the old tuberculin treatment, including the radiating red lines in the

* For further testimony in favor of Finsen's treatment see Discussion at the Paris Internat. Cong., Derm. Sect., 1900, at the annual meeting Brit. Med. Assoc., 1901, in *Brit. Jour. Derm.*, vol. xiii., 1901. Leredde and Pautrier and others, *Annales de Derm. et de Syph.*, vol. iii. (1902), pp. 327, 329, etc.

course of the lymphatics. The lupus area becomes deep red, swells up, and exudes a serous fluid, breaking down into a raw surface, which takes three or four weeks to heal under boric acid ointment and europhen. Then the process is repeated, and ultimately sound cicatrization results, also smooth and thin, like that of the Finsen treatment in most cases, provided the reaction has not gone too far. Some think that the exposures should be stopped before there is decided reaction, but then the result is very imperfect. On the other hand, it is not always possible to regulate the exposures to the exact amount of reaction desired, the inflammation progressing sometimes for two or three weeks after the exposures have been stopped on the production of a very moderate erythema, and then ulceration may be produced which takes weeks or months to heal. Besides controllable conditions, such as the spark length of the tube, not less than six inches, the time of each exposure ten to twenty minutes, and the proximity of the tube best at four inches, there remain uncontrollable elements, such as idiosyncrasy of the patient, and peculiarities in certain tubes which cannot always be ascertained beforehand.

It is this want of control that is the chief drawback, and Morris and Dore think the scar is not so good as that of the Finsen method, but this has not been my experience, which is very favorable to radiography, except as regards perfect control as to the amount of effect produced. On the other hand, it can be used over a much larger area at a time than the Finsen, the course of treatment is usually shorter, ulcerating lupus usually heals well and soundly, and mucous cavities can be treated effectually. Probably it is not so reliable in deep-seated lupus. In some cases the two methods might be combined with advantage. Like all other methods, many repetitions are required.

High Frequency Currents, as first used by D'Arsonval, have been used with success in lupus by Oudin, Brocq, and others, and the action is said to be similar to that of the Röntgen rays, but their advantages over the preceding methods have not been proved for L. vulgaris, but they will be further reverted to under L. erythematosus.

Radium.—This rare and expensive element is said to give off emanations which affect lupus, and Danlos has experi-

mented with it with some good results, but at present it is more of a curiosity than a practical method. A small quantity of the chlorid diluted with chlorid of barium is inclosed in a caoutchouc bag, and fastened to the diseased area. It has been used in lupus erythematosus with some benefit.

Hot Air Currents even up to 300° C. on the one hand, and *freezing* with ethyl or methyl chlorid on the other, have had advocates, but have not had enough success to establish them as generally recognized means of treatment.

Medical Methods of Local Treatment.—They may all be divided into two classes: (1) those which protect the part or diminish hyperemia, and so favor involution; (2) those which destroy the diseased tissue. Those of the first class have only a limited sphere of usefulness, but they are often serviceable in paving the way to more radical measures, which it is seldom judicious to urge upon the patient without some preliminary treatment. Calamin lotion, frequently and perseveringly applied, is one that is useful at first for lesions on the face with signs of active inflammation, but which are not actually ulcerating; it lessens hyperemia, partially conceals the eruption, and some degree of involution is often effected. Mercurial plasters, the emplastrum Vigo, or Vidal's emplastrum rubrum (Plasters, F. 6), may often be applied at night, and are very valuable adjuncts.

The inunction of simple ointments or soft soap, caoutchouc coverings, and most of the plasters recommended, soften and facilitate the removal of the scales or crusts, and pave the way for more energetic treatment. Brooke's ointment (Lupus Therapeutics, F. 1), acts in a similar direction, and produces a certain amount of involution if firmly rubbed in night and morning for some minutes. If the skin becomes broken, a milder antiseptic ointment, such as boric acid, should be applied till it is sound again. A formula I have found useful is iodoform gr. 10, creolin ℥iij, lanolin ʒv, parolein or pure heavy paraffin oil ʒiij. The disagreeable odor of iodoform is favorably modified by the creolin. It should be rubbed in firmly, but not briskly. Europhen gr. 10, instead of the iodoform and creolin, is a good substitute, and nearly free from smell.

When operative measures are refused by the patient, or for other reasons they may not be desirable, caustics find a place. Those which have a selective action on the diseased tissue are

preferable. They are arsenic, salicylic and pyrogallic acids, but their use is diminishing in favor of the light, and other treatments less disagreeable and painful.

Arsenical Paste (Hebra), (Caustics, F. 1).—This is spread upon linen, and applied evenly in strips to the affected part; a pad of lint is placed over it, bound on firmly, and allowed to remain for twenty-four hours; the part is then cleansed and the paste reapplied for another day, and again renewed unless there is already ulceration, when one or two applications may be sufficient. To avoid any danger of arsenical absorption only a limited area should be treated, say three or four square inches at the most, though it is used more freely in Vienna. The great advantage of this treatment is that it picks out and utterly destroys the diseased tissue, while leaving the healthy tissue untouched, and the islands of healthy tissue thus left much facilitate the healing and diminish the scar. The disadvantages are, that the pain is very severe after the second day, and there is great swelling and edema in the neighborhood. These, however, soon subside after the removal of the paste. Its use is much restricted in favor of other applications.

Salicylic Acid, as an ointment in the proportion of ʒj to ℥j, was first suggested to me by a Mr. Marshall,* and I used it with success, and subsequently Unna brought it into notice, and introduced plasters (see Formulæ) made by Beiersdorf of Hamburg, with 30 and 50 grams of the acid to the meter, and for lupus 40 grams of creasote were subsequently added to diminish the pain. In these plasters the active ingredients are formed into a magma with oleate of alumina, and spread on a gutta-percha sheet backed with muslin. It acts far more efficiently thus made than when incorporated with the plaster basis in the ordinary way, such plasters being almost useless. It is most efficacious when applied to raw surfaces, when the disease is not very deep-seated, bound firmly on, and renewed once, or if there is much exudation twice, daily. A good, smooth cicatrix usually results, but the treatment is tedious and painful. An even better mode of using it is that of Treves, to add as much salicylic acid to glycerin as will make a paste, applied on lint. The pain does not last more than a few minutes, but there is no objection to adding creasote or carbolic acid (ʒss to the

* *Brit. Med. Jour.*, June 25, 1884.

℥j), or, still better, painting on a twenty per cent. solution of cocain before applying it.

Pyrogallic Acid has gained favor of late years in the treatment of lupus. Besnier brushes on a saturated solution of the acid in ether, and then covers it with traumaticin, repeating the treatment until all lupus points have disappeared. It acts by exciting suppurative dermatitis. Schwimmer also advocated its use after cleansing the part with vaselin, applying a ten per cent. ointment two or three times daily for a week, and then putting empl. hydrargyri on the raw surface, repeating the process until no more nodules appear. It is not very painful as a rule, and is said, like arsenic, to pick out the diseased tissue. I have used it with moderate success.* Brocq finds the combination of pyrogallic and salicylic acids in ten per cent. collodion the most efficacious method of using these substances.

Lactic Acid has been used in the form of the pure acid of a syrupy consistence. It is not of much use where the skin is sound, unless scarification or scraping precedes its application. It should not be kept on too long, or deep scarring may ensue. It is most useful for lupus of mucous membranes, and cocain, painted on before applying the acid, prevents pain. A twenty per cent. solution is often strong enough for the mouth.

White of Harvard acts on the bacillary theory, and applies a solution of bichlorid of mercury, one or two grains to the ounce, and says a cure is effected in a few months; an ointment of the same strength may be used continuously. Doutrelepont indorses White's opinion, using a solution of 1 in 1000 under gutta-percha tissue, and both Auspitz and he have injected a one per cent. solution into the interstitial tissue in hypertrophic lupus of the lip, etc.

Permanganate of Potash is another drug applicable in certain cases, on the method of Schultz of Kreuznach. He paints on daily, or every other day, a ten per cent. solution of permanganate of potash, until a thin, black crust is formed; the nod-

* It should not, however, be used for a very large surface at a time, as dangerous symptoms from absorption have arisen when it has been employed over a large area for psoriasis, and occasionally it acts with unexpected energy, and gangrene even has followed too prolonged an application.

ules are softened, and can be wiped away with cotton wool. The treatment requires six or eight weeks. It is adapted to superficial and recent cases. Butte uses compresses soaked in a two per cent. solution, and Hallopeau has used it also with good effect and recommends it in ulcerated and vegetating patches, but it is no good in non-ulcerating lesions. Spraying with hydrogen peroxid is also useful for ulcerating patches.

Other caustics, such as the Vienna paste of caustic potash and unslaked lime, chlorid of zinc paste and the solid stick of nitrate of silver for plowing up the diseased tissue, are given up in favor of less barbarous agents, as they are very painful for hours, and the first two are non-selective in their action.

Although these are not a tithe of the measures that have been recommended from time to time for this obstinate affection, they are those which in my opinion are the most efficacious, and while no one treatment is the best for all cases, the methods I use most, apart from the light treatment, are excision or erasion on the mixed method, the acid nitrate of mercury applied with a piece of wool, and salicylic acid ointment, paste, or plaster.

Thus in an ordinary case of lupus, if I had a free hand, unless time and money were no object, when Finsen or Röntgen rays would be tried, I should operate at once if the patient were in good health, as he often is. But if his circumstances did not permit it, or it was not deemed judicious to suggest any operative measures before his mind was prepared for it, one of the palliative measures described or a salicylic acid preparation might be used for a time. If the operation were erasion, it should be followed immediately by the free application of carbolic acid or linimentum iodi to the wound, and the subsequent administration of thyroid extract for a long period, or tuberculin injections before the wound has healed. If the mucous membrane of the mouth is involved I should attack it with the galvano-cautery or lactic acid. If there were any thickening of the scar after healing, repeated scarification followed by the application of mercurial plaster would improve it, or thiosinamin injections might be tried, and Finsen light is also of use in thickened scars.

Recurrent nodules would be bored out with a match-end dipped in the fuming acid nitrate of mercury, or with

nitrate of silver crayon. Unna prefers the liquor antimonii chloridi, and leaves the match-end in for forty-eight hours. If the skin over them were hard, Vidal's knife rotated or Morris' screw might precede the caustic; or a hard wood German toothpick is a very good substitute, and this could be dipped in the acid. An ulcerating lupus, spreading rapidly, is best treated by deeply scarifying the border three or four times, and rubbing in iodoform directly after each scarification. Possibly the Röntgen rays would have a good effect.

In a small number of cases, more or less acutely inflammatory, all strong measures seem rather to aggravate than cure, and milder applications, at all events for some time, answer best. Compresses should be bound on, wet with one of the following lotions: lead lotion ♏x to ♏xxx to ℥j, perchlorid of mercury 1 in 2000, boric acid in saturated solution, chlorate of potash 5 or 10 grains to the ℥j, chloral gr. 5 to the ℥j, or weak Condy's fluid (red). Calamin lotion is another good application, applied three or four times a day and allowed to dry. When the acutely inflammatory symptoms have subsided by these means, more radical treatment may be proceeded with.

LUPUS VERRUCOSUS.*

Synonyms.—Tuberculosis verrucosa cutis; Verruca necrogenica; L. scléreux (Vidal).

Definition.—A form of tuberculosis of the skin in which there is warty development on an infiltrated but not nodular base.

Although not going so far as McCall Anderson, who considers L. verrucosus as separate an affection from L. vulgaris as is L. erythematosus, the clinical differences from L. vulgaris are so considerable that it conduces to clearness of conception to consider them separately. Pathologically the number of tubercle bacilli present is greater than in L. vulgaris, and they are proportionately easier to find.

It is rarer than L. vulgaris, and is the form of disease usually assumed when tubercle is accidentally inoculated in the skin. *Tuberculosis verrucosa cutis* of Riehl and Paltauf compre-

* Author's Atlas, Plates LXIII., Fig. 4, and LXVIII. Figs. 2 and 3.

hends the cases of L. verrucosus inoculated from animals in butchers, etc., while *verruca necrogenica* represents the anatomically identical local tuberculosis that is sometimes produced on the hands of those who make post-mortem examinations.

Clinically the lesion is a slightly raised, infiltrated, and reddened plaque, forming the base on which there is a firmly adherent warty crusting. This crusting may be fairly uniform or much broken up into craggy masses, depending on the degree of enlargement of the subjacent papillary growth. The crusting varies in superficial extent, and may in very indolent cases cover the entire lesion and be the only feature visible, as if it were merely a diffuse wart, or, as more frequently happens, the inflammatory-looking base extends to a greater or less extent beyond the warty covering. There is a complete absence of the characteristic soft, reddish-brown nodules of L. vulgaris, the lesion being very firm to the touch. It is very liable to inflame from time to time, and pus may then be squeezed out between the sulci of the horny crust, giving a relief which the patient often finds out for himself. It tends to slowly enlarge peripherally, and may persist for a great many years, though it is said to be more liable to give rise to pulmonary or other visceral tuberculosis than other forms of lupus. It attacks the limbs, especially the hands and feet, less frequently the face, and very rarely the trunk. There is generally only a single lesion, but it is not uncommon for it to be multiple, and I have seen fifty lesions on the limbs of a boy of ten, and twenty in a child of three; in fact, it is the most common form of multiple lupus, and the one in which the lesions most frequently appear simultaneously or nearly so. Some of these multiple cases where the warty character is only slightly developed may be mistaken for psoriasis, but there are no scaly crusts, and what there are adhere, and in fact, send processes downwards which make it very difficult to pick them off.

In exceptional cases it ceases to enlarge, involution sets in from the center outwards, and ultimately produces a spontaneous cure, but not without leaving a scar. In a few cases it occurs in a band or streak along the limb.*

* Hutchinson's smaller Atlas, Plate CXXIX. Plate XIV. illustrates a similar distribution, but with different clinical features. See Lupus Marginatus.

Etiology.—It generally commences in early life, and a febrile illness, especially measles, is a frequent antecedent of the multiple cases. The probable explanation is that the toxin of the exanthem leads to the softening of a tuberculous glands, and the liberated bacilli are sent broadcast over the body, but that does not explain the concentration of the lesion in the limbs. The single lesions probably arise from direct inoculation.

The so-called *tuberculosis verrucosa cutis* is most frequently seen in butchers, cooks, coachmen, and others who have to do with animals dead or alive; and Fabry * has shown that it is also very common in miners, who frequently get slight abrasions on their hands and inoculate these from their own nose and mouth. The *verruca necrogenica* is seen chiefly in post-mortem porters, pathologists, doctors, and others who handle dead bodies, and both these forms affect chiefly the knuckles, interdigital folds, and occasionally other parts of the hands and forearms. A good example occurred on the knuckles of a post-mortem porter at the East London Hospital for Children, and is depicted in Plate LXVIII., Fig. 3, of my Atlas.

When first seen by me it had been present five years. Soon after he began post-mortem work it started on the first knuckle of the left hand, where he had knocked off a piece of skin. It began as a red, slightly raised, flat papule, on which there was no pustule until some time afterwards. The pustule dried into a scab, which eventually fell off, leaving the surface slightly irregular. The papillæ became gradually more prominent, and the lesion spread at the periphery, but two or three years elapsed before it got quite horny. Meanwhile the disease had started at two other foci on the third and fourth knuckles, and, progressing at the rate of about half an inch a year, reached nearly all across the hand, where it formed an irregular, flat, warty mass, raised up about a quarter of an inch, with red, slightly raised, sinuous border and sloping edges. On picking off part of the horny covering, the red, slightly moist, hypertrophied papillæ came into view; and at times the patch itched and felt hot, and then, on lateral pressure, a little pus escaped between the papillæ and gave him relief; otherwise it gave him no trouble unless he knocked it.

* "On the Occurrence of Tuberculosis Verrucosa Cutis in Coal Miners," by J. Fabry, *Archiv f. Derm.*, vol. li. (1900), p. 69.

Pathology.—The lesion is acknowledged to be the result of the irritative presence of tubercle bacilli in the skin, and they are present in greater numbers than in L. vulgaris, while they are not so numerous as in the acute tuberculous ulcer. The

Fig. 46.—Lupus verrucosus from the back of the thumb.

a, enlarged papillæ ; *b*, down-growing interpapillary processes ; *c*, plasma cells almost limited to the papillary layer ; *d*, coil glands. There is considerable increase of the horny layers. Tubercle bacilli were present in moderate numbers. × 50.

alliance of the different forms of tuberculosis of the skin is shown by the occasional association of L. verrucosus and L. vulgaris and scrofulodermia in the same individual. E. Knickenberg * collected a series of cases at the Bonn clinic.

Anatomy.—Riehl and Paltauf † investigated the histology of cases inoculated from animals, and described it as a tuberculosis of the skin, intermediate between lupus and tuberculous ulceration. In the upper

* "Ueber Tuberculosis verrucosa cutis," *Archiv f. Derm. u. Syph.*, vol. xxvi. (1894), p. 405. Good abs. *Annales*, vol. vi. (1895), p. 163. See also Rosenthal in *Archiv*, vol. xlviii. (1898), p. 151. Abs. in *Annales*, vol. x. (1898), p. 510.

† *Viertelj. f. Derm. u. Syph.*, 1886, Heft i. p. 19, with colored plates of histology.

part the structure is much the same as in the papillary growths of ichthyosis hystrix, while in the papillary vascular layer, besides foci of inflammation, there were sometimes veritable miliary abscesses, the source of the pus occasionally observed in the course of the affection. There were also caseating nodules, with the structure of tubercles, containing giant and epithelial cells within which were bacilli, with the staining reaction of tubercle bacilli, and a few were also found free in the granulating tissue. These bacilli were more numerous than in lupus tissue, but by no means abundant, four or five in a nodule at the most; cocci were also present in the inflammatory tissue. These authors also found the same changes in "Verruca necrogenica"; and Unna* found that L. verrucosus was anatomically as well as clinically identical with these lesions. Fig. 46 shows a lesion I examined.

Treatment.—If the lesions are multiple, scraping with a sharp spoon and the subsequent application of pure carbolic acid is the best plan, but for a single lesion less severe measures are effectual. The horny covering is first to be got rid of by applying repeatedly, for some days at a time, the strongest salicylic acid plaster of Unna, and this alone will get rid of a good deal of growth; the rest is destroyed with the fuming acid nitrate of mercury, applied with a piece of wood. The acid should be applied to only a small portion of the growth at a time, as it is in some cases very painful for some hours. The Atlas case, one of the most extensive I have seen, was quite cured by these means.

Lupus Marginatus, Hilliard's Lupus. Under these names Hutchinson† has described a rare form of disease of which he has seen four cases. In three of the four the disease began on the hand and traveled in a line rather quickly up the extremity to the shoulder. The initial patch was the largest and suggested local inoculation. One woman was past forty at the onset; the others began in childhood. There was but a scanty history of tuberculosis in the patient and family. The majority of the component patches were discrete and oval, or crescentic in a narrow line on the forearm and arm. In the type case the patch over the ball of the little finger was rough and thickened and raised a quarter of an inch above the level, not ulcerated, but with an adherent scaly crust dipping into minute depres-

* Unna's *Histology*.

† Plates XIII. and XIV. of Hutchinson's smaller Atlas, and four cases are recorded in a lecture, *Polyclinic Journal*, vol. ii. (1900), p. 104.

sions on the surface, thus resembling L. verrucosus. On Hilliard's face there were numerous patches irregularly scattered over the lower part of the face and only a few on the forehead. They formed circles, crescents, and gyrate patches with delicately papular or nodular borders and a pale, thin, cicatricial area. The patches on his arm partook more or less of the characters of the face and hand patches, but in some places, especially on the hand, there were narrow lines of little nodules of cornlike structure.

There is no proof that the disease is tuberculous; in fact, the pathology is unknown. The disease persisted for a number of years, not altering materially after the first year. The only availing treatment was to destroy the lesion, which Hutchinson did by attacking the border with the actual cautery; one case was treated with potassa fusa successfully.

MILIARY TUBERCULOSIS OF THE SKIN.

This may occur in the form of nodules or ulcers, the latter being formed by the breaking down of aggregated nodules. It is a rare affection, and generally an acute manifestation, analogous to visceral miliary tuberculosis, with which it agrees in structure and bacteriology. The acute tuberculous ulcer * round mucous orifices has long been recognized, but Kaposi,† in an analysis of twenty-two personal cases, has brought the fact into prominence that the affection may also be seen as miliary nodules in the skin, sometimes isolated and scattered throughout their course, but more frequently aggregated into plaques, generally confined to one region, most commonly the face (nose, cheeks, lips, and chin) and the ears, less frequently the buttocks, perianal region, elbow, forearm, etc.

In a man, æt. twenty-one, attending U. C. H. with numerous scrofulodermia lesions on the upper and lower limbs, the right leg became suddenly swollen and painful; he felt ill and was in bed two days. When seen a few days later there were a large number of pin's-head to hemp-seed-size nodules scat-

* Neumann's Atlas, Plate L., gives a good representation of acute ulceration of the nostrils.

† Kaposi, *Arch. f. Derm. u. Syph.*, vol. xliii. (1898), p. 373.

tered over the leg, which underwent very little change beyond slight enlargement in the course of a year.

In one-third of Kaposi's cases the skin alone was affected; in one-third the adjoining mucous membranes were also involved, the mouth, tongue, palate or nose, and less often the vulva, vagina, or anus. The aggregated nodules may coalesce into a flattened infiltration, and break down into characteristic, very superficial, painful ulcers,* with finely denticulate borders, which, as well as the base, are pale red and covered with sero-viscous secretion. The borders also present, at once or ultimately, minute nodules, isolated or in several rows, which ulcerate and join on to the main ulcer, and thus produce the finely dentate borders. They are not present at all periods.

The ulcers of mucous membranes have similar characters, rounded, dentate borders, with a grayish coating over the base and very often miliary nodules round them. One-third of Kaposi's cases developed acutely in three or four weeks, the others at various periods up to three or four years. Most cases are associated with tuberculosis of the respiratory organs; less frequently other viscera are affected, but it is not specially associated with acute miliary tuberculosis of the viscera nor necessarily towards the end of the internal disease, for they sometimes heal spontaneously, and more frequently if treated with local antiseptics and well-directed general treatment.

Iodoform would probably be the best application, and then boric acid ointment. Well-marked cases involving the skin, both developing acutely after measles, are recorded by Leichtenstern † and Pellagatti.‡ In the former's case, a child of four, there was acute miliary tuberculosis of the viscera, and on the face, trunk, and limbs, poppy seed to hemp seed, firm red, acuminate papules; some developed a vesicle, others a pustule on the apex of the papule, and the majority in from one to two weeks involuted with a small scale or crust; stained sections showed numerous tubercle bacilli.

* They are sometimes large; Hallopeau had a case of perianal ulcer, 5 in. × 3 in.

† *Münch. med. Wochensch.*, No. 1 (1897), p. 1. Full abs. in *Brit. Jour. Derm.*, vol. ix. (1897), p. 247.

‡ Pellagatti, "Giorn. Ital. d. Mal. Ven. e d. Pelle," 1898, p. 704.

Chronic miliary and large nodules isolated or aggregated in the skin are met with from time to time, such as Dale James' case,* where there were two or three groups on the face, one of them on the nose; and Du Castel's,† where they were more numerous, and had been present two years in a child of five, immediately following measles. In neither of these were there visceral lesions.

Ulcers ‡ of slower development with abundant bacilli also occur, and not necessarily with visceral tuberculosis.

In Jessner's case,§ in a girl of fifteen, reddish-brown, soft nodules had been developing for six years on the nose, head, back, and extremities. They were from one to five lines in diameter, the largest hemispherical, the smaller ones conical, some isolated, some grouped, some smooth, others frambesiform, but not moist; others were slightly scaly, but in most the surface was undisturbed and were all alike. The microscope and inoculation into guinea-pigs and rabbits showed them to be tuberculous granulomata.

Liddell's case ‖ was in flatly convex, smooth, firm, deep red, or violaceous half-inch patches on face, arms, and feet. Their tuberculous nature was first revealed by the microscope, which showed them to be made up of nodules of a tuberculous structure.

ACUTE TUBERCULOUS ULCER OF THE SKIN.

Symptoms.—This is a variant of miliary tuberculosis, and an extremely rare affection, Chiari having found it only six times in 7000 post-mortems, of which about sixty per cent. had died of tuberculosis. It is almost limited to the lips and other neighborhoods where the mucous membranes join the skin, viz., the nose, the anus, vulva, and glans penis, but in one case it was behind the ear. The lesions consist of one or more dis-

* Dale James, *Sheffield Med. Jour.*, October, 1892. Abs. *Brit. Jour. Derm.*, vol. v. (1892), p. 58.

† Du Castel, *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 729.

‡ Author's Atlas, Plate LXII., Fig. 3. An ulcer at inner canthus in connection with the lacrymal duct.

§ Internat. Atlas, Fasciculus xiii., Plate XXXIX.

‖ *Brit. Jour. Derm.*, vol. xii. (1900), p. 319. Lupus circumscriptus (nodularis).

crete, shallow, not painful ulcers, which form apparently spontaneously,* have an irregular, eroded, moderately infiltrated edge, and, when the crusts which soon cover them are removed, show a reddish-yellow, granular surface, with a thin scanty secretion. They never heal, spread slowly but continuously, and may coalesce with neighboring ulcers, becoming, as in Jarisch's case, seripiginous; they may thus extend over an area of one or two square inches, but as a rule are small; when on mucous membranes, yellow miliary papules exist near them. Since they are usually only part of an extensive infection, especially of the lungs and the mucous membrane of the respiratory and digestive tracts, they have a comparatively rapid downward course of a few months at the most. In a case of Kaposi's the skin lesions were thought to be primary, tuberculosis elsewhere being limited to the intestine.†

Diagnosis.—Their nature may be suggested by the evidence of tuberculosis elsewhere, especially when there are ulcers on the oral mucous membrane or tongue. In the absence of signs of general tuberculosis, the diagnosis is often only made post-mortem, when the microscope shows, in addition to the uniform leukocytic or lymphoid infiltration at the base and border of the ulcer, close by, or even away from the original seat of disease, true miliary tubercles, consisting of lymphoid, epithelioid, and giant cells, often showing signs of commencing caseation. The best local treatment would probably be iodoform.

Tuberculous ulcers may be acute or chronic, primary or secondary. They are acute and primary in miliary tuberculosis, chronic and secondary in lupus vulgaris and scrofulodermia. These are often complicated with papillomatous development, or, more correctly, papillary growth, and are then often called lupus papillomatosus. Doutrelepont ‡ also describes ulcers re-

* *Viertelj. f. Derm. u. Syph.*, 1879, p. 269. A very good representation is in Plate L. of Neumann's Atlas. Plate LXII., Fig. 3, of the Author's Atlas shows tubercular ulcer of slower development in connection with the lacrymal duct.

† In a case of phthisis reported by Vidal, hard bean-sized nodes preceded the ulcers on the breast, face, shoulder, and arm; these "tuberculomata" softened and discharged a whitish tough mass. Nobl, *Wien. med. Presse*, No. 31, 1900, p. 106, summarizes the cases and condition to date.

‡ *Archiv f. Derm. u. Syph.* (1896), p. 278.

sembling varicosed ulcers, and others like a phagedenic chancre. According to Hallopeau and Wickham, tubercle bacilli may be pyogenic through their toxins, and produce pustulo-ulcerations, such as were formerly described as *impetigo rodens*, and the pus will produce tuberculosis in guinea-pigs, although no bacilli can be found in the original pus. This lends some support to the theory of some French authors of glœic tuberculosis with absence of separate bacilli. Serpiginous ulceration resembling the serpiginous nodular syphilid may be occasionally met with. Brownish-red infiltrated patches or nodules break down into centrifugally spreading ulcers with a gray or reddish-yellow floor, and more or less cicatrization intermingled. The disease may affect a large or small area, and secondary lesions may form, and even visceral tuberculosis ensue.

SCROFULODERMIA.*

Deriv.—*Scrofa*, a sow.

Symptoms.—This term includes the various forms of suppurating dermatitis which attack strumous persons, who, almost always at the same time, present some of the other manifestations of this condition, such as enlarged, caseating, and suppurating glands, conjunctivitis, or the scars of keratitis, blepharitis, rhinorrhea, or otorrhea, joint or bone disease, etc., and probably the characteristic physique.

The most common origin for the lesion is in the skin over caseating and softening lymphatic glands, which implicate the tissue over it, so that the skin becomes red, flabby, undermined, and even riddled with sinuses, which have been, or are in communication with the remains of the gland below. Ulcerations starting from this inflamed skin may slowly spread over the face and neck, which are the commonest positions for such lesions. In other cases lupus vulgaris develops round a sinus constituting one form of scrofulous lupus. They may also occur independently of the glands, beginning as nodules (**Scrofulo-gummata**) in the subcutaneous tissue, which enlarge to hazel- or walnut-sized tumors, and implicate the skin over

* Author's Atlas, Plates LXII., Fig. 2, and LXVIII., Fig. 1.

them; this becomes red, but not very tender, while the tumors, which are almost painless, soon soften with obvious fluctuation. Even then they may become absorbed and disappear, leaving only a red spot to mark their site. Or the tumor may be evacuated spontaneously or by incision, and either heal up slowly, or form a spreading ulcer. The *scrofulo-gummata* may occur in the course of the lymphatics of a limb,* as in cases described by Lailler, Besnier, and Hallopeau.

The strumous ulcer varies; sometimes it has thin, red, undermined edges, with irregular base, and flabby, thin, pus-covered granulations; or there may be only a flat ulcer, with sharply cut edges slowly spreading, but seldom healing spontaneously; such ulcers may be seen sometimes at advanced age in people who bear the scars and features of a strumous childhood, and are liable to develop into rodent ulcer or epithelioma. These ulcers of senile struma † often take on a papillary hypertrophy, and may form the so-called lupus papillomatosus,‡ which are, as I have previously stated, referable to scrofulodermia rather than to true lupus.

Sometimes in ulcers of moderate size the pus dries in enlarging layers as the ulcer spreads, and the limpet-shell appearance of rupia is imperfectly produced, for the process being slower the crust is not so well formed as in the syphilitic lesion, but it used to be designated "scrofulous rupia."

When the soft tumors, above described, occur on the limbs—a frequent position—the bones are also sometimes implicated, especially those of the fingers. In such cases they may form a tumor embracing the whole segment, and the bone often becomes carious (strumous dactylitis). This results in considerable deformity, and is the lupus mutilans § of some authors.

In some of these cases there is papillary hypertrophy and

* There is a model in the Museum of the College of Surgeons of this condition, showing suppurating and other nodules extending up the arm from a lesion of the thumb. No. 170a, Derm. series; and Plate XXXVI., St. Louis Atlas.

† Paget, "Clin. Essays," "Senile Scrofula"; Howard Marsh, "Senile Tuberculosis," *Lancet*, April 16, 1892; Colcott Fox, four cases, *Brit. Jour. Derm.*, vol. iv. (1892), p. 160; also Travers Smith, *ibid.*

‡ Author's Atlas, Plate LXIII., Fig. 3.

§ Plate LXII., Fig. 2, Author's Atlas. Plate LXXI., Hutchinson's smaller Atlas.

fungating growths, and the skin is of a livid red, pierced by numerous sinuses.

Strumous people are very liable to recurrent lymphangitic attacks at short intervals, often very like erysipelas. When this occurs in the lower limbs—its most frequent seat—a chronic lymphatic edema results, which leads to the development of elephantiasis of the limb, often with considerable papillary hypertrophy. It is also not uncommon in the face, and leads to permanent swelling of the features, especially the nose, cheeks, and upper lip. There may or may not be true lupus associated with it in the earlier stage; if there is, the condition called by older authors "lupus hypertrophicus" is produced. Under the name of primary tuberculosis of the skin Dr. Hebb read a paper on a case of this kind at the Medico-Chirurgical Society in March, 1886,* in which the patient, æt. eighteen, had died with what was considered to be elephantiasis Arabum of the leg, and the skin showed microscopically, in addition to the usual appearances of elephantiasis, aggregations of large and small lymphoid cells with numerous giant cells interspersed, and in the lymphatics and among the aggregations of lymphoid cells abundance of small bacilli, staining like those of tubercle.

Tuberculous Tumors. Doutrelepont described a case of tuberculosis of the skin which suggested a mycosis fungoides, or a sarcoma of the skin. The patient was a girl of six, who had had good health up to two years old, when she had measles, and the other disease began during the eruptive period, commencing as a tumor of the upper lip, followed by twenty-eight similar tumors on the chin, neck, trunk, and limbs. They were round, sharply defined, and of variable size. The smallest consisted of a uniform, circumscribed, smooth infiltration, which projected but slightly, while the largest projected considerably above the surface, and were furrowed and covered with crusts and scales, but all except those on the hands were smooth, while the hand-growths showed on removing the crusts and scales an ill-developed papillomatous structure. There were no ulcerations, cicatrices, or traces of scars on or near the tumors. They were movable with the skin. There was general slight enlargement of the lymphatic glands. Nothing in the

* *Brit. Med. Jour.*, March 27, 1886.

family history, but injections with the first tuberculin showed local reaction, and the histology and inoculation experiments confirmed the inference that the neoplasms were tuberculous.*

Hallopeau quotes Riehl's, and Wickham and Gaston's cases † to show that similar tumors may aggregate and ulcerate.

Eruptions which might be included under the term tuberculids sometimes precede the gummatous lesions. Morris ‡ showed a case at the Dermatological Society of a boy with a strong family history of tuberculosis, in whom six months previously there had been a transitory eruption of pimples, followed by the development of nodules of variable size and shape from a lentil to a nux vomica seed, better felt than seen, though over some of them the skin was bluish-red. They were firm, movable, and tender, and scattered over the limbs, especially the legs. Hallopeau § had a case which began with papules like lichen scrofulosorum, then became pustules, which coalesced into patches, some of them over two inches in diameter. The center became depressed and ulcerated, while the periphery indurated and one part became bullous.

Pathology.—It has long been assumed that scrofulodermia is a form of tuberculosis of the skin, and tubercle bacilli have from time to time been found in it; but as far back as 1884 Arloing ‖ found that scrofulous glands did not produce visceral lesions in the rabbit, while pulmonary tuberculosis did do so. He made further experiments which confirmed him in the view that tuberculosis and scrofula were not identical. More recently (1897), Ritter ¶ set himself the task of answering the question, "Does scrofulous tissue contain tubercle bacilli at the outset?" and his answer is in the negative, although he admits that in advanced cases tubercle bacilli are often found. His conclusions are: That the processes of tuberculosis and scrofulosis are not identical; but that the presence of scrofulosis affords a favorable soil for the invasion of the tubercle bacillus,

* *Archiv f. Derm. u. Syph.*, vol. xxix. (1894), p. 211. Abs. in *Annales*, vol. vi. (1895). p. 434.

† *Loc. cit.*, *Derm. Cong. Trans.*, p. 406.

‡ *Brit. Jour. Derm.*, vol. ix. (1897), p. 331.

§ *Annales de Derm. et de Syph.*, vol. vi. (1896), p. 1093.

‖ *Abs. Brit. Med. Jour*, October 16, 1886, "Annotation."

¶ Ritter, *Allg. med. cent. Ztg.* (1896), lxvi., p. 654. Abs. in *Clin. Jour.*, July 27, 1898, p. 279.

and, as is well known clinically, a slow intermingling may occur, and that there exists a great affinity between the two processes.

Diagnosis.—Scrofulodermatous ulcers and nodules have to be distinguished from lupus vulgaris and syphilis.

In *lupus vulgaris,* while the other strumous lesions are present, there is an absence of the characteristic lupus nodules, destruction, and not infiltration, being the distinguishing feature of scrofulodermia. When the two conditions are present together * the ulcers are often deep and the crusts thicker, greener, and more prominent.

Although most of the lesions are distinguishable some seem to shade off, and the two conditions to be so mixed up together sometimes that it is impossible to decide between them; but the treatment being on much the same lines in such cases, the exact diagnosis is not so important.

The distinctions from *syphilis* are the same as those between lupus vulgaris and tertiary syphilis. Leloir,† however, claims to have proved, both clinically and pathologically, that there were mixed conditions in which the lesion was a compound of scrofulo-tuberculosis and syphilis—in other words, that there was a *bona fide* syphilitic lupus. His paper has not carried conviction to my mind that this view is correct.

Treatment.—This should be directed to the general health, where possible, by improving the surroundings, *e. g.*, sending the patient to live at the seaside, the administration of cod-liver oil and iron in full doses, such as ℥ss to ℥j of the syrup of the iodid of iron, with a liberal diet. Thyroid extract, given as in lupus vulgaris, should also be tried.

Locally, unhealthy fungating granulations should be scraped away with a sharp spoon and strong carbolic acid applied; undermined skin should be snipped off with scissors, sinuses laid open, and the ulcers dressed with recently prepared iodid of starch paste or iodoform, or the yellow or black wash applied under oiled silk. Where operative treatment is undesirable or unsuccessful, salicylic and glycerin paste with carbolic acid is

*Examples of this combination are in Author's Atlas, Plates LXII., Fig. 1, and LXIII., Figs. 1 and 2.

†*Jour. des Mal. Cutan.*, vol. for 1891, September number, and long abstract, *Brit. Jour. Derm.*, vol. iv. (1892), p. 165.

very efficacious. Chaulmoogra oil internally, in the form of emulsion, in from ten to thirty-minim doses, and externally as an ointment one to three, has, where tolerated, an admirably good effect. For the multiple cold abscesses, sulphid of calcium pills, gr. 1-6 *ter die*, may be given along with general measures, but each abscess should be opened as soon as it is recognized, syringed out with carbolic lotion 1 in 40 and iodoform dressings applied.

ERYTHEMA INDURATUM.*

Synonym.—Bazin's Disease.

Definition.—A disease characterized by deep-seated gumma-like nodules, chiefly of the legs, of slow course, and tending to break down into ulcers.

Erythema induratum is a rare affection in England, but was described by Bazin as not uncommon in France under the name of "Érythème induré des scrofuleux." His description was, however, overlooked or misunderstood for some years even in France, and it is only in recent years that it has again attracted attention. It has no relationship to E. nodosum or other form of E. multiforme, although it bears some resemblance to the former. Bazin did not describe the ulceration, which is now recognized as a common feature.

Symptoms.—The disease attacks the calf, or immediately below it, more frequently than the front of the legs, and has often a single plaque, but there may be many. Bazin speaks of it as acute in its onset, bright red at first, but gradually assuming a violet hue, and it is either in a diffuse, ill-defined patch or in nodules. As I have seen it, the nodules may be either superficial or deep in the cutis, the latter often showing no alteration on the surface, and only perceptible to the touch as they become more superficial. They are bright red at first, fading to a more livid hue; the borders are ill-defined; and the lesions, which may be either in nodules or plaques, are from a quarter

*Colcott Fox, *Brit. Jour. Derm.*, vol. v. (1893), p. 225, colored plate, gives history and literature to date; and in *Trans. of Thirteenth Internat. Cong., Derm. Section, at Paris*, 1900, p. 115 and p. 113, Boeck, Colcott Fox, and others discuss its relationship to tuberculosis.

to an inch or more in diameter, always better felt than seen, and they may coalesce into large brawny infiltrations in the calf, and less frequently in the front of the leg. These indurations, with or without a slightly livid surface, may either be very slowly absorbed, or they may necrose and slough out, leaving a very indolent ulcer, strongly suggestive of specific origin. Strumous girls and young women are most liable to it, but it may occur in boys, and I have seen a marked instance in a man of thirty-six * of phthisical stock, but not himself consumptive. It had been going on from the age of eighteen at intervals, but the actual attack I saw was of seven weeks' duration. He had nodules and ulcers, the largest of the latter the size of a shilling, deep and sloughy. The case of Galloway's mentioned below was a man of twenty, and C. T. Dade's case was a man of forty-two. I have seen it in a woman over fifty, who had, however, suffered from the same thing when a girl. She had in addition lupus vulgaris of old standing. Colcott Fox has observed small suppurative nodules on the fingers (folliclis) associated with this disease in several cases. He and Galloway have also noted angio-keratoma in the same subjects as E. induratum, and Galloway's case also had folliclis, so too had J. C. Johnston's case. Hutchinson says that pustular ophthalmia is a feature of the disease, but his experience is not the usual one.

In a severe case of mine, in a woman, æt. thirty-seven, there were a few nodules on the upper limbs. Pringle and S. Mackenzie have also had cases affecting the arms, and Galloway had a case affecting all the limbs, shoulders, and ankles. The diagnosis of these cases was not absolutely conclusive. Pain and tenderness are usually absent, but may be marked. Edema of the legs is not unfrequently present, but whether before or after the development of the nodules is doubtful. The cases, however, in which there is edema, lividity, and diffuse induration from the stagnant circulation belong to a different category. The disease runs a very indolent course of months, or even years, with a tendency to recurrence. One of Hutchinson's cases lasted with intermissions for twenty years.

Etiology.—It is much more common in females than males, and in the second decade of life, and has not yet been noted much beyond the fifth. It is most frequent in winter, especially

* Mr. F. T., Case Book F., p. 286.

in those who have cold hands and feet (the chilblain circulation), and have much standing; hence washerwomen are frequent victims, especially in countries where they wash out of doors. A considerable number have evidence of tuberculosis in themselves or their family, but the tide of opinion has ebbed and flowed against the original view that it is a scrofulous disease, or that it should be reckoned as a tuberculid (see Pathology). Hutchinson considers it the former, Boeck the latter; and Hutchinson does not consider scrofula and tubercle identical, though often allied.

Pathology.—The pathology is still not beyond discussion, unless Thibierge's and Fox's experiments are considered to settle the question. The most modern view is that it is a tuberculous affection, due to the direct presence of bacilli, owing much of its characters to a defective circulation, as evidenced by its almost always occurring on the legs, and its greater frequency in those who stand much and are exposed to cold, especially in winter.

Anatomy.*—Audry was one of the first to make a histological investigation, and found spontaneous local edema followed by fatty degeneration. This was confirmed by Ewing in Dade's case. J. C. Johnston and Leredde also found perivascular changes, but none of them found "giant cells," or other proof of its tuberculous origin. Thibierge and Bavant, however, not only found giant cells, but successfully inoculated a guinea-pig and produced fatal tuberculosis in thirty-five days; and Colcott Fox and Eyre confirm this, both as regards giant cells and also fatal inoculation of tuberculosis in a guinea-pig.

Mantegazza† examined two cases histologically, and found granulomatous structure and giant cells, but no bacilli, neither by microscope nor by guinea-pig inoculation. He rejects the idea of tubercle toxins, and thinks that the lesions could only be produced by the bacilli themselves, though they be sparse and attenuated. He thinks it should be classed with the scrofulodermata, and not with tuberculids.

Whitfield reconciles these discrepancies by contending that there are two distinct affections included under erythema induratum: one of tuberculous nature, rebellious to treatment,

* Review by C. Fox, *loc. cit.*, and *Brit. Jour. Derm.*, vol. x. (1900), p. 389.

† Full review to date, as well as histology of his two cases, *Ann. de Derm. et de Syph.*, vol. ii. (1901), p. 498. Full abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 438.

coming on exclusively in young girls, and painless unless it has ulcerated; the other occurring in middle-aged women, less painful, more easy to cure, having nothing to do with tuberculosis, and corresponding to the nodular necrotic phlebitis of Philippson. Audry, Galloway, and some others regard it as a chronic and sometimes ulcerative variety of erythema nodosum, but I think the clinical appearances and course are opposed to this. Neither can Whitfield's contention be considered as more than a general truth as regards age and sex, as my own adult male was an indisputable case, and there are others like it on record.

Diagnosis.—The prominent features are: its localization to the legs, especially the calves; the presence of gumma-like nodules often ulcerating; its chronic, almost painless course; and finally that most of its victims have a feeble circulation and come under the term scrofulous.

It differs from erythema nodosum in the following respects: it occurs more on the back than the front of the legs; its characters are indolent, but it tends to ulcerate; tenderness and febrile symptoms are absent; it has a long duration with relapses; and the number of lesions, although small at first, ultimately is large. There are no rheumatic associations, but those of tuberculosis and of a feeble circulation are frequent.

From gummatous syphilis it differs in its etiology, duration, evolution, and finally, if there is still doubt, by its not responding to specific treatment; indeed, iodid of potassium often aggravates it.

Treatment.—Before ulceration has occurred careful but firm bandaging, with moderate exercise, is the right course, and Hutchinson says that the application of an ointment of hydrarg. bisulphuret gr. v., adip. benz. ʒj, is almost a specific; after ulceration prolonged rest with the legs raised is indicated, together with tonics and good living, but the course is generally very slow.

LUPUS ERYTHEMATOSUS.*

Synonyms.—Seborrhœa congestiva (Hebra); Lupus erythematodes; Lupus superficialis (Parkes and Thompson); Lupus sebaceus; *Fr.*, Older authors; Scrofulide érythémateuse; Érythème centrifuge (Biett); *Ger.*, Lupus erythematosus.

Definition.—A cellular infiltration, producing various-sized, red, scaly patches, clinically resembling an inflammation, but with a tendency to atrophic scarring.

L. erythematosus is only half as frequent as L. vulgaris † in hospital practice, occurring only in 6.3 per 1000, but in private practice it is twice as common, viz., nearly 18 per 1000, against 9.8 per 1000 L. vulgaris. It was described by Biett, Hebra, Parkes, Thompson, Cazenave, etc., under various designations, but that of Cazenave has displaced all others.

Clinically it may be divided into four varieties:

1. Circumscribed or discoid;
2. Diffuse or disseminated;
3. Telangiectic;
4. Nodular.

Symptoms.—The **circumscribed** or discoid is the most common form, attacking chiefly the head and face, especially the nose, cheeks, and lobes of the ears, often symmetrically. While no part of the body can claim absolute exemption, the next most frequent seats, in addition to the bridge of the nose, cheeks, and ear lobes, are the tip and alæ of the nose, the orbits, the lips in all parts, the scalp, leading there to permanent loss of hair, and the back of the fingers and toes. In the early stage it usually appears as isolated or grouped small red spots, about one-eighth of an inch in diameter, with a yellowish spot and a small, closely adherent scale, evidently sebaceous in the center, and when this scale is removed, it is found to dip deeply into the dilated sebaceous gland-duct, in which it forms

* *Literature.*—Author's Atlas, Plates LXIV., LXV., LXVI., LXVII. Plate XLII. "Syd. Soc. Atl.," Duhring's Plate C., Hebra's Atlas, Plate VIII., offer some of the best illustrations of the chief varieties.

† Bulkley finds it more common than L. vulgaris in America, and Kopp in Munich met with thirty-five cases out of eight hundred of all forms of skin disease.

a plug. This is the stage which Hebra first described as *seborrhœa congestiva*, or primary eruptive spots; these spots slowly extend peripherally, and ultimately coalesce into one or more reddish patches of varying size, still scaly, and with conspicuous yellow sebaceous plugs. These patches often present a dirty yellowish-white appearance, rough to the touch from the horny plugs in the follicles, while the border of the patch is red, and raised above the central portion. This condition is most marked on the nose, but is also seen on the malar eminences and in the scalp; it is the *L. sebaceus* of Hutchinson. When it is more uniformly inflammatory, the patch, which is only slightly raised above the surface, but has a well-defined border, continues to enlarge, undergoes involution in the center, which sinks down and ultimately may clear away completely. It then leaves only a thin white cicatricial area, with a red raised border about one-eighth of an inch thick, which is often still studded with horny comedones; or, if the involution be incomplete, it remains slightly reddened, with closely adherent scales. Not infrequently the nose and cheek patches enlarge until they meet and form one large patch, resembling a butterfly in outline; but the disease is usually of many months' or years' duration before it has attained to this size.

Another mode of commencement is that of well-defined, very bright, uniformly red spots, which become raised patches, hot to the touch, and slightly desquamating. This erythematous aspect is very persistent as a rule, but may, either spontaneously or by treatment, clear away without leaving a trace behind; but more frequently there is some atrophic scarring. I have also seen it as persistent red plaques, like an erythema exudativum, the epidermis being unaffected. This last form is very rare, and the other erythematous variety is more often seen in the disseminated than in the circumscribed form. In these modes of commencement the follicles are not primarily affected, as in the sebaceous form. In the scalp it also begins in the follicles.

While, as a rule, there is only slight scaliness most marked at the border, in others there is a distinct horny, closely adherent crust covering the whole surface, but with a bright red border beyond. When the back of the hands is affected it often takes this crusted form, with red borders. In a case of Hallo-

peau's,* a man of sixty-one, a warty development occurred, something like that of L. verrucosus.

When the patches coalesce irregular or gyrate patterns are produced, but they do not enlarge indefinitely, but after a variable time become stationary or involute still further, even the borders becoming less red and prominent. Ultimately, in a few fortunate cases, nothing may be left except the thin white scars; yet even then recurrence may take place in the scar, and by this means, and by the formation of fresh patches, keep up the disease for an indefinite time. Spontaneous ulceration is exceptional, except in the lobes of the ears and on the scalp. As a rule, in this class of case, there is no disturbance in the general health, but complications may occur, such as erysipelas, and, indeed, sometimes the lupus appears to date from an attack of erysipelas. On the other hand, erysipelas may produce a very rapid involution of the disease. In the case of a young woman with crusted L. erythematosus over almost all the face, an attack of erysipelas was followed by the complete disappearance of the disease over almost all the affected area, except a small patch on each cheek, leaving a white thin cicatrix. Unfortunately, the patches that were left slowly spread, until a great part was again involved, but it was never over so large an area, nor was it so crusted, as before.

In the diffuse form,† **L. disseminatus** (Hebra), the patches are much more numerous, but each commences in much the same way, except that the erythematous mode of onset is more frequent than the seborrheic. The patches nearly always begin on the face, and, in addition to the positions already enumerated, may form in any and every part of the body, usually attacking the limbs before the trunk, so that the eruption by coalescence may, in rare instances, become well-nigh universal. As a rule, it involves large surfaces, gradually invading one place after another, though by no means continuously.

In this form the disease may be acute, either from the first, or successive acute outbreaks may supervene upon what was apparently an ordinary chronic and localized condition. The

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 206.

† Kaposi's Hand Atlas, Plates CLXXXIX., CXCV., CXCVI., acute bullous febrile type, like persistent erysipelas of the face, CXCVII., CXCVIII.

initial lesions are covered with crusts instead of scales, and when closely aggregated resemble a pustular eczema, the differences being that the elementary component lesions are always discernible, the crusts very adherent, and when removed reveal the patulous sebaceous openings. These acute cases are always accompanied by marked febrile symptoms of an irregularly intermittent type, with severe headache and boring pains of the bones and joints. Kaposi also describes persistent erysipelas-like swellings of the face with typhoid symptoms, a temperature of 104° F. with coma, and a mortality of fifty per cent.

In a case under Hallopeau * the eruption, at first only on the face, progressively invaded the trunk and limbs. The outbreaks of eruption were like a persistent polymorphous erythema, sometimes with vesicles or bullæ, and always preceded and accompanied by intense itching. The case was thought to be an early stage of mycosis fungoides, but subsequently the diagnosis became clear, some of the patches disappearing, and others becoming cicatricial, and with the typical characters of L. erythematosus. Besnier records a similar case.† Kaposi and Abraham have also had cases with bullæ. In a case of my own, æt. thirty-six, it followed uremic convulsions as a general erythema in thumb-nail-sized discs, in which condition I first saw her in consultation with Mr. Bailey. She recovered from this, the albumin dropping from one-third to a trace, and then lupus erythematosus developed on the orbits and cheeks, then over the whole scalp, which was denuded of hair and became cicatricial. Subsequently it extended to the extremities and trunk, but I only saw her once in this stage. The eruption was erythematosus for the most part, but in some places scaly and crusted. She died about four months from the onset of the lupus development, probably from the old kidney disease.‡ This occurrence of albuminuria with widespread disease has also been noted by Abraham, Sequeira, and others, and should be looked out for in acute cases.

* *Ann. de Derm. et de Syph.*, vol. for 1891, p. 389, and abs. *Brit. Jour. Derm.*, vol. iv. (1892), p. 123.

† Besnier, *Annales*, vol. iii. (1892), p. 455, both of the type of Kaposi in Plate CXCVI., above mentioned.

‡ Private notes, H., p. 611.

Kaposi describes the following local complications of the acute and subacute cases: (1) Sometimes, preceding the development of "the primary eruptive spots," subcutaneous, deeply seated, doughy, painful, and tender, nut-sized nodules appear while the skin over them is still normal, and disappear when "the primary eruptive spots" are fully formed. (2) Nodular, edematous, painful, doughy swellings, on which L. erythematosus spots may or may not subsequently appear, develop on the skin and tissues round the joints of the hands, feet, knees, and elbows. (3) Very numerous "hemorrhagic flat blebs," from a lentil to a sixpence in size, disseminated or grouped round a central bulla, like a herpes iris; if the raised epidermis is removed, a hemorrhagic point in the corium is still left, about which the eruption spot subsequently develops. (4) Swelling of the parotid and lymphatic glands in various parts, chiefly where the lupus process is most active; the swelling, as a rule, does not last long, but returns with each exacerbation, but suppuration is rare. (5) The persistent erysipelas-like condition of the face, already mentioned, which is very liable to lead to a typhoid state and a fatal issue, or genuine erysipelas or lymphangitis, which may spread rapidly over a wide area and endanger life, or be limited or transitory. When erysipelas is severe it aggravates the lupus disease, but complete involution of the lupus may ensue, in this as in the chronic form, when the erysipelas lasts for some time.

The more chronic cases may have no defect of the general health, or there may be tuberculosis, anemia, uterine or other derangements, either combined or alternating with the exacerbations and remissions.

In the third, or **telangiectic,** form,* which Kaposi does not appear to recognize, there may be no marked change of the surface, except a persistent circumscribed redness, which close inspection shows to be due to dilated vessels. It may be single, but is commonly situated symmetrically on both cheeks, very much of the size and shape of the red patch which the circus clown paints on his face (the flush patch of Hutchinson), and is not very noticeable to the eye, but on pinching up the tissues there is marked thickening. Sometimes a few comedones may be present, but they are never conspicuous, and there is no

* Author's Atlas, Plate LXXI., Fig. 2.

desquamation. These cases run a very slow course, and may remain for years with very little alteration. If involution should occur, a little streaky superficial scarring would probably be left. I have seen it associated with the usual form on the scalp. For Hutchinson's *Nevus lupus*, see Angioma serpiginosum.

The **nodular** form is very rare, and was first described in my second edition. I have seen several cases, and all but one in adult women; the youngest was a lady of thirty-four, who had had a red patch on the side of the nose, and the nodule developed on this a few months previously. In one of the most marked cases, about a score of roundish or oval, convex, distinctly raised nodules, from a hemp seed to a small bean in size, were scattered over the upper part of the face, nose, and lip. They were of brownish-red color, very like L. vulgaris, but there were one or two on the auricle flatter and more like erythematous lupus, and on the back of the right hand there were two or three commencing nodules. A group on each side of the forehead, at the border of the hair, coalesced into a small patch, which was flattened in the center, leaving a prominent rim, and subsequently was slightly cicatricial. The nodules enlarged very slowly, and showed very little tendency to undergo central involution. The patient was a stout lady of forty, dyspeptic, but with no organic disease in herself or her family. Subsequently all the patches involuted, apparently spontaneously. In a third case, an elderly woman, there were bean-sized patches scattered over the whole face; they were distinctly raised, and remained unchanged for years. Another case was in a man, æt. fifty-eight, who had three small nodules on the left lower eyelid, and another on the cheek; they were destroyed by electrolysis. Individually the lesions are often remarkably like a single nodule of L. vulgaris, but from their general behavior and distribution it seems more probable that they belong to this type.

Pringle * showed a case at the Dermatological Society of London, a woman, æt. fifty-four, with cancer of the uterus and symmetrical nodules on the nose, cheeks, and ears.

On the *hands and feet*, especially on the fingers and toes,†

* *Brit. Jour. Derm.*, vol ix. (1897), p. 201.

† Nevins Hyde, "Lupus Erythematosus as it affects the Hands: a Clinical Study," in *Amer. Jour. Cut. and Ven. Dis.*, vol. ii. (1884), p. 321—a

often affecting only the back of the terminal phalanges, but present elsewhere occasionally, the disease may begin as a persistent erythema, often looking like chilblains, but generally with some scaliness; but when involution occurs, whether spontaneously or as the result of treatment, there is always more or less atrophic scarring, though sometimes it is so slight as to be only in whitish streaks in the healthy skin. It may also be seen as plaques, with a horny adherent crust and a red border; painful fissures are apt to occur in this form, from loss of elasticity of the skin and the constant movement. In these cases the sebaceous glands are not primarily involved, and indeed it may occur in parts where there are no sebaceous glands, such as the palms and soles. It is rare on the *mucous membranes* of the cheek and hard palate, where it is seen as soft red or gray exudations or whitish scars. I have had well-marked cases. Dubreuilh,* Galloway, and Leslie Roberts have recorded instances. I have also seen it as irregular but superficial ulceration of the center of the tongue, while on each side of the raphé were whitish pea-sized areas surrounded by a zone of deep redness. They were closely aggregated, but discrete. Audry has also had a case affecting the tongue, in the form of two bright red symmetrical patches level with the rest of the surface.

The course of L. erythematosus is, as a rule, very slow; cases may last for ten or twenty years, spreading slowly, but often with long intervals of quiescence; but it is always liable to more rapid development. On the other hand, many cases get well spontaneously or as the result of treatment; and Hutchinson is of opinion that cases tend to get well as old age approaches, but I have seen it in septuagenarians.

good paper, with a table of thirty-five cases on the hands, and *résumé* of previous observations. Ohmann-Dumesnil collected forty-five cases; in twelve it began on the face, in the rest on the hands. The lesions, as a rule, affect the dorsal surface of the fingers, and do not extend beyond the nails. Ninth Intern. Med. Congress, 1887. The Sydenham Society's Atlas, Plate XLII., shows the erythematous form, and Tilbury Fox's Atlas, Plate XLV., Fig. 2, the crusted form, very well. A vascular erythematosus form is shown in Plate LXVII., Figs. 3 and 4, of my Atlas; but Figs. 1 and 2 I now consider are not lupus erythematosus. (*Vide* Granuloma Annulare.)

* Dubreuilh gives a review of cases in *Annales de Derm.*, vol. i. (1900), p. 231.

Chilblain Lupus—Lupus Pernio. Hutchinson has described cases under the first name, and Besnier and some subsequent French writers cases under the second name.

Hutchinson's cases are forms of lupus erythematosus like those above mentioned. They attack chiefly the fingers and toes, and next the nose and ears, but may also involve other parts of the face and forearms, and may affect them more severely than in the usual situations. They form well-defined persistent purplish, red patches, with or without scaliness, and especially affect the knuckles and terminal phalanges. They are at first excited, and always aggravated, by the winter's cold, and ameliorate, but do not disappear in the summer, except in some cases at an early stage.

Besnier's Lupus pernio * is another form which occurs in persons with a weak circulation, the eruption being *en nappe*, but on close examination, with the skin slightly scratched, a fine nodular composition is revealed. Hutchinson says this is quite different from his cases, and thinks it is a L. vulgaris in a person with weak circulation. Tenneson has seen it associated with lupus vulgaris, and has noted dilatation of follicular orifices.

Complications.—Hutchinson has drawn attention to the occasional occurrences in cases of long-standing lupus erythematosus of the scalp of an *acneiform eruption* on the shoulders. These lesions sometimes spread at their borders, and thus assume lupus characters; in one case there were half-inch patches made up of groups of little red lichenlike papules, some with evidence of scar formation.

In Plate LXI., Fig. 3, of my Atlas, a breast is depicted on which were persistent scaly lesions one-eighth inch in diameter, like a psoriasis punctata; on the back of this patient beneath the scapulæ were somewhat similar lesions, but, instead of being persistent, they only came out in the spring and autumn, and after lasting six weeks disappeared.

Galloway had a case of a woman of forty-five with L. erythematosus of fifteen years' standing, in which the scalp lesions developed *bullæ*, which coalesced and extended to the margin of

* Plates XVIII. and XXXV., St. Louis Atlas, and the text. See also, discussion on a case shown by Tenneson, *Annales de Derm. et de Syph.*, vol. iii. (1892), p. 1142.

the affected area. The contents were limpid or turbid. After six weeks the bullæ ceased, and the surface healed without extension of the lupus. The face lesions were unaffected.

Epithelioma may develop in the cicatrices of L. erythematosus, as it may in those of L. vulgaris, but far less frequently. A case is depicted in Kaposi's Hand-Atlas, Plate XCIX.,* on the upper lip, and Pringle † has recorded a case in which multiple epitheliomata developed on the scalp and recurred several times after free removal. Hollaender ‡ also has had a case.

Erysipelas and its effects have already been mentioned. Several cases of *folliclis* of the hands associated with it have been observed by Hallopeau, myself, and others. Hallopeau has also seen spontaneous follicular suppurations and intensely destructive acneic lesions near the patches.

Etiology.—It is very much more common in females than males in hospital practice, and in my private practice it is over five to one (eighty-five to sixteen), and occurs chiefly between the ages of eighteen and forty-five years, while it is never seen in infants, is rare in children and in old age. The oldest, in my experience, was a woman of seventy-one, in whom it had commenced in the hand two years before, and the youngest was six years old; but Kaposi records a case in a child of three years. Speaking broadly, its period of earliest onset coincides with the cessation of the liability to a primary attack of L. vulgaris. The etiology is, however, obscure for the most part. A history of phthisis in the family is frequent—Hutchinson says even more so than in L. vulgaris, but I should not go so far as that. § I have also

* Kreibich gives the history of this case, and reproduces the illustration, *Archiv f. Derm. u. Syph.*, vol. li. (1900), p. 347.

† *Brit. Jour. Derm.*, vol. xii. (1900), p. 1, with colored plates, and references to other cases.

‡ *Zeitschrift f. Derm.*, vol. vii. (1900), p. 962.

§ Sequeira's statistics of 71 cases at the London Hospital corroborate these statements. Eighty-five per cent. females to fifteen males, 56 out of the 71 between sixteen years and forty, 7 over forty, 8 under fifteen, and the extremes were eleven and fifty-eight years. A family history of phthisis in 34 out of 71, but in 11 disseminated cases 8 had phthisis in the family. There was evidence of tuberculosis in the patient, in 7 out of 11 of the disseminated cases, but in the discoid cases, 3 out of 60 cases had phthisis, 7 had strumous glands, and 1 hip disease.

thought that uterine derangements possessed an etiological importance. A feeble circulation is a favoring influence, and not infrequently the disease dates from some form of superficial inflammation, such as scarlatina or erysipelas. Prolonged exposure to great heat in the sun, or to great cold, especially cold winds, has appeared to be the exciting cause in some of my cases. The association of copious albuminuria with the diffuse form is too frequent to be fortuitous, but does not explain the pathology of the disease. Sometimes it follows smallpox, and it is said that persons with light skin and hair are more liable to it than dark-complexioned people. Its much greater frequency in the well-to-do as compared with L. vulgaris is noteworthy.

Pathology.—The disease is generally considered to have no pathological relation to L. vulgaris, but some authors * still regard it as a form of tuberculous disease, and there are certainly cases in which the two forms of disease seem to approach each other, in clinical characters at all events. Anatomically the lesions are indistinguishable from an *inflammation of the cutis*, in which the infiltration elements undergo fatty degeneration and lead to the atrophy of the tissue in which they are deposited. No tubercle bacilli have ever been found, † and attempts at inoculation of animals have always failed.

It has been suggested that it might be due to the toxin of tubercle; but against this is the fact that, in the early days of tuberculin for lupus vulgaris and phthisis, thousands must have

In 2 of the acute disseminated cases, local irritation, viz., poultices to the abdomen, and the light treatment respectively, brought out the eruption. Five out of 10 diffuse cases had albuminuria. *Brit. Jour. Derm.*, vol. xiv., 1902.

* C. Boeck opened a discussion in Edinburgh, in which he set forth the grounds for his belief in the tuberculous origin of lupus erythematosus. *Brit. Jour. Derm.*, vol. x. (1898), p. 371. He states that in thirty-six cases of discoid L. erythematosus twenty-four showed evident symptoms of scrofulo-tuberculosis, and of the other twelve, six had near relations who were tuberculous. He also says that, as in macular anesthetic lepra, the patches of L. erythematosus are distributed in the course of nerves. Neither of these statements is borne out by English experience. See also the discussion on Tuberculids at Thirteenth Internat. Cong. at Paris, 1900, by Boeck, C. Fox, Campana, etc.

† Audry found them in a case of the disseminate form in two lesions, and none in a third, but all observers have failed.

had the tubercle toxins injected, and in no recorded case was lupus erythematosus produced; moreover, there was either no reaction or a very trifling one in all but a very few cases of L. erythematosus in which tuberculin was injected. The cases are uncommon in which phthisis, generally enlarged glands, or lupus vulgaris, or other forms of tuberculosis have been associated with, or have developed in patients with, L. erythematosus.

Still, many distinguished observers besides Boeck believe it to be of tuberculous origin on clinical grounds. Among these may be mentioned Hutchinson, Besnier, Hallopeau, and most of the French school, but it is certainly not bacillary.

The balance of evidence, in my opinion, points to its being primarily a vaso-motor disturbance leading to an inflammation of the skin, perhaps of toxic, but not of tuberculo-toxic origin, especially predisposed to by a feeble blood-current; secondarily, there is microbic invasion of the disturbed epithelial layers; while in the acute general form there is an additional infective element introduced into the system, and especially invading the lymphatics.

Anatomy.—Early observers considered, on clinical and pathological grounds, that the disease was primarily situated at the sebaceous or sometimes the sweat glands. Geber and Strogamn confirmed by Schütz, Unna,* etc., say that the disease commences in the papillary or deeper layers, and affects the gland structures secondarily.

According to Unna there are primary epidermic changes, hyperkeratosis on the scalp, forehead, etc., or acanthosis (prickle cell growth), but not with downgrowth of the papillary processes, for it is compressed between the cellular growth in the cutis below and the increased cornification above. The horny plugs may or may not correspond with the follicular orifices, but when they do, the cells of the sebaceous glands undergo fatty degeneration, and finally atrophy (Schütz), and the horny pegs fill the vacancy. The blood-vessels of the cutis are surrounded by sheaths of plasma cells which soon atrophy. The cells are of nearly uniform size, and multi-nuclear and giant cells are absent, distinguishing it from lupus vulgaris and syphilitic lesions. According to Unna, at the height of development the cellular areas are composed of almost cubical cells at the periphery and round ones at the center, all with a large round or oval deeply-staining nucleus surrounded by a fine regular shell of deeply-staining protoplasm. Inside the cell masses are channels of enormously dilated lymph spaces, due to "insulated liquefaction of cellular territories." There is also marked edema of the cell areas. The elastic tissue of the affected area is for the most part preserved.

* "Histopathology," p. 1071, under Ulerythema Centrifugum.

Unna sums up the characteristic features as follows:

"The formation of areas of inflammatory cellular new growth; the disappearance of the latter and of the collagenous tissue in favor of the dilating lymph system; the primary hyperkeratosis with or without epithelial growth and its results; the edematous changes with hyalin swelling of the inflammatory body and prickle layer; and the formation of peculiar plug-carrying scales, with stoppage of the follicles and ultimate atrophy of the cutaneous structures. In the lupus pernio of the fingers, great hyperkeratosis is the main feature, with resulting pressure atrophy of the subjacent structures."

Schoonheid * has examined twelve cases histologically. He regards the disease as a chronic inflammatory process rather than a granuloma, and thinks the process begins in the rete, followed by a perivascular infiltration round the subepithelial vessels. The process extends upwards and downwards and round the appendages of the skin. It consists at first of leukocytes, but later there is proliferation of connective tissue cells, and the infiltration becomes more diffuse. There are some mast cells, but the proportion varies. Plasma cells are only found at the periphery of the foci, never in the central part.

Diagnosis.—It is very protean in its manifestations and often imitates other diseases,† so closely sometimes as to require the greatest care in its diagnosis; and even the most experienced are sometimes deceived until further development reveals the true character of the eruption. The most characteristic features are—the age at which the disease begins; its slow course, its symmetry, and the position of the superficial patches on the cheeks and nose, ear tips and scalp; the sharply defined border; the closely adherent scales with processes dipping into the sebaceous orifices; the absence of ulceration; and the presence of more or less atrophic scarring, while there are no papules or nodules. In all these particulars, except the slow course, it differs from *L. vulgaris*, to which it has some clinical resemblances, especially in adults, in whom nodulation is often inconspicuous or absent. L. vulgaris erythematodes of Leloir is the only form difficult to distinguish. (See that disease.)

* *Archiv f. Derm. u. Syph.*, December, 1900, p. 163. Good abs. *Brit. Jour. Derm.*, vol. xiii. (1900), p. 159.

† See for further details a paper by the Author, "Lupus Erythematosus as an Imitator," *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol xii. (1894), p. 1.

Less typical instances, where the scaliness is more abundant than usual, may be mistaken for *psoriasis*. This resemblance is so great, in some instances, that Mr. Hutchinson believes in a hybrid condition of "lupus-psoriasis." * S. Mackenzie showed such a case at one of the societies, and Dr. Neale of Leicester sent a young woman to me (whose sister was subject to ordinary psoriasis), who had indubitable L. erythematosus of the face, while on the forearms there had been an eruption like psoriasis, which was cured with chrysarobin ointment, but left scars. It must, however, be borne in mind that scarring is in rare instances left in true psoriasis. In a lady of thirty who had had psoriasis on her elbows which left scars, when I saw her she had typical lupus erythematosus of the ear lobes and left cheek. Her brother suffered from ordinary psoriasis.

Similarly, the appearance of *eczema* may be produced, which Hutchinson calls "eczema-lupus." The sharply defined border in lupus should excite suspicion, and on attempting to remove the crusts in an acute case, or the scales in a chronic one, they will be found firmly adherent, and sending processes down into the follicular openings. Here, too, if the disease is of some standing, more or less scarring will be present. In the chronic cases the slow development, the greater infiltration, and the trifling variations in intensity will give the right clew. Tilbury Fox also described an acne lupus, or "lupoid acne," but this has nothing to do with L. erythematosus. On the hand, especially on the fingers, it may be mistaken for *chilblains*. The distinguishing features are the persistence of the lupus patches through the summer, and the slight scaliness. Sometimes there is slight streaky scarring on the backs of the fingers, sometimes a central depression and atrophic scarring, which, affecting the pulp of the finger, renders it conical and bloodless. Cases with thick, yellowish, horny flakes covering the patch offer little difficulty in diagnosis.

These compound terms are better avoided, although, as before said, ordinary inflammations do sometimes seem to be the exciting cause of the lupus inflammation, and L. erythematosus frequently imitates simple inflammations, such as erythema exudativum, chilblains, etc., besides those already men-

* *Clin. Soc. Trans.*, vol. xv. (1882), p. 252, colored plate. He considered that it was lupus vulgaris. In this case also a sister had ordinary psoriasis.

tioned. The telangiectic cases are like *acne rosacea* in some respects, but the symmetry on the malar eminences, the absence of papules or pustules, and the induration and persistence are distinguishing features, and there is no scarring in acne rosacea as a rule, except from the larger acne pustules.

Indeed, the cicatrices will distinguish it from any other inflammatory infiltration, except some of those due to syphilis. In them there is more deposit and less vascularity than in the lupus, and they run a more acute course. The scarring of hydroa vacciniformis may sometimes suggest L. erythematosus, but the antecedent vesicular lesions and the intermittent summer course would be reliable guides.

Prognosis.—The more the disease resembles an ordinary dermatitis, *i. e.*, the highly erythematous cases, the more often they are amenable to treatment; and sometimes they involute spontaneously, the scarring being in proportion to the depth of the infiltration. In the chronic limited patches, although often obstinate, great improvement can always be obtained and a cure sometimes effected, but very seldom without leaving a scar. In the acute or subacute diffuse eruption it is impossible to tell at once what will be the result, but it is so often fatal that it is essentially a grave disease, and a guarded prognosis is all that is possible. White * of Boston is very pessimistic for all forms, but, as Hutchinson has pointed out, there is a tendency to get well in the course of a long time, as it seldom lasts into old age.

Treatment.—The internal treatment is not very satisfactory. Arsenic is relied upon by some, and Hutchinson records a single case in which it was apparently the curative agent. A case which I saw with my colleague, Mr. Battle, also got well with arsenic, no local treatment having been employed; but these cases are too exceptional to give much credit to the drug. McCall Anderson advocates the iodid of starch as curative in some and beneficial in many cases. It is made by triturating twenty-four grains of iodin with a little water, and then gradually adding an ounce of starch, rubbing them well together until the mass becomes of a deep blue color. It is then dried with a very gentle heat, and a heaped teaspoonful is given in water or gruel three times a day. The dose may be safely increased up to an

* *Jour. Cut. Gen. and Ur. Dis.*, vol. xvi., October, 1898.

ounce. The iodid should be freshly prepared and kept in a stoppered bottle. I have not had success with it. Iodid of potassium also has its advocates; others, notably Bulkley, believe in phosphorus 1-50 to 1-30 of a grain three times a day. Payne gives large doses of quinine, twelve to thirty grains a day. I have had far better results with salicin internally than with any other drug. Beginning with a dose of fifteen grains three times a day it may be increased, except in the few cases in which the patient is intolerant of it, to twenty or even thirty grains a dose. It is most likely to be successful in the actively inflammatory cases, and, like every other drug, generally fails in the chronic cases with a few indolent crusted patches. However, as it can do no harm, and other drugs so rarely do any good it is worth trying in nearly all cases. I have also given ichthyol, in five-minim doses in the form of pills or capsules, three times a day after meals, and thought that it had some effect in reducing the hyperemia, but all direct remedies are only too likely to be disappointing. When they fail I rely chiefly on those measures which will best promote the general invigoration of the patient, seeking for indications of anemia, tuberculosis, gout, dyspepsia, uterine or ovarian irritation, etc., and endeavoring to correct such errors, and, for the rest, address myself to efficient local treatment.

Locally.—In all cases the affected parts should be protected against any sudden or great alterations of temperature and against any local irritation, especially of sun and cold winds. The local applications come under *soothing astringents,* such as lead and zinc applications.

Compressing agents, such as collodion.

Discutients, such as soft soap, liquor potassæ, and salicylic acid.

Bactericidal applications, such as perchlorid of mercury, iodoform, etc.

Caustics, such as acid nitrate of mercury, Paquelin's cautery; *surgical means,* such as scarification, erasion, and electrolysis, and the light treatment.

Considerable judgment, to be gained only by experience, is necessary for the choice of the best method for any particular case of this obstinate disease; but it should always be borne in mind that, wherever there is active hyperemia, this should be subdued by such means as would be employed in cases of dry

dermatitis of any form before the more special measures are resorted to. Any application which irritates is only too likely to make the disease spread, and that often at a most alarming rate.

If the inflammation is active, calamin or lead lotion—either the undiluted solution of the acetate, the glycerole, or the lactate of lead—may be painted on twice a day or more, and the emplastrum hydrargyri worn at night.

Collodion, not the flexile, has also given good results in my hands by compressing the vessels. Unna advocates ichthyol preparations, such as zinc ichthyol salve muslin at night, after fomenting with hot water. Unna's iodoform gutta-percha plaster muslin is also a good application for limited areas. Where there is less hyperemia, a lotion of sulphid of zinc, as recommended by Duhring, suits some cases. It consists of sulphate of zinc, sulphuret of potassium, of each thirty grains, alcohol ℥iij, and rosewater ℥iv. The zinc and potassium should be dissolved separately, and then mixed. Hans Hebra recommends dabbing with pure alcohol many times a day; its evaporation produces by cold a contraction of the blood-vessels which is very beneficial.

In cases with the horny adherent crusts so common in the so-called sebaceous form on the nose and cheeks, an excellent treatment is that recommended by Hebra. The spiritus saponatus kalinus is rubbed on firmly with a piece of lint or flannel. This removes the scales and fatty plugs, and if done thoroughly there is some oozing of blood and serum, which dries into crusts, and these fall off in a few days, or sooner if soaked in oil. The process is then repeated, and sometimes, in a few weeks, a limited patch may be quite removed without even leaving a scar. It is especially useful in parts like the eyelids, where the skin is thin, and also before and after more severe applications; oil of cade ℥j or ℥ij to the ℥j is a useful addition sometimes. Soft soap is a similar remedy, and may be used continuously spread on lint, and acts then as a mild caustic. Neither soft soap nor the spirit soap should be used where there is active congestion, or they will very likely aggravate the eruption. Painting with liquor potassæ acts in a similar way; after a couple of minutes it may be washed off and boric acid ointment applied. Great care is necessary to get success without injury.

A milder and more generally applicable treatment with a similar idea is moderate friction of the part with benzolin, as recommended by Hutchinson, followed by a mild antiseptic ointment, such as iodoform gr. 5 to ℥j or boric acid. I can speak in the highest terms of this treatment, except where there is great hyperemia. It should be used at night, and calamin lotion applied in the daytime; but if the benzolin produces any irritation it should not be rubbed in more than two or three times a week.

Coming to stronger remedies: For limited surfaces Payne's treatment with salicylic acid, three to six per cent. in collodion, often gives excellent results. Unna uses ten per cent. resorcin in collodion. It is safer to use not more than two per cent. at first, as resorcin appears to form some kind of compound with collodion, which sometimes acts as a strong caustic.

Richardson's sodium ethylate, carefully painted on, may be used for small patches, care being taken to keep the part dry afterwards till the eschar has separated. Chloracetic acid, applied with a glass rod, is a rapid superficial escharotic and not very painful, and is highly spoken of by Veiel, while for larger surfaces he prefers a ten per cent. pyrogallic acid ointment, applied for three or four days or until a brownish superficial eschar forms, when it is covered with an iodoform bandage until the slough separates, and the wound is then dressed with iodoform. I prefer carbolic acid in crystals or combined with equal parts of camphor to any other caustic, as its action is superficial and not painful after a few seconds.

Schültz recommends painting with liq. Fowleri four parts, aq. distillatæ thirty parts, with chloroform ♏ij, to prevent the solution from getting moldy. He paints it on every day for five days, which produces swelling, redness, and tenderness; this is subdued with a soothing astringent, such as calamin, and then painting with the arsenical solution is resumed. A cure results in two to three months. Other methods with more or less good credentials are: painting with oleum rusci or cadini, or glycerin of iodin, composed of ℥j of iodin, ℥j of iodid of potassium, and ℥ij of glycerin. Arsenical paste is also effectual for obstinate cases, but is very painful, and burns rather deeply. Purdon cured a case by painting with a three per cent. solution of resorcin, and covering with an india-rubber mask. For my

own part I try calamin lotion, collodion, with or without salicylic acid, mercurial plaster, benzolin, and sometimes the spirit-soap treatment, and if good results are not obtained, I try linear scarification, as recommended by B. Squire, with his instrument, a bundle of knives, constructed to make parallel incisions one-sixteenth of an inch deep. These incisions are then crossed in two or three directions, and iodoform well rubbed in. The division of so many vessels effectually starves the disease, the bactericide adds to the good effect, and great improvement results. The operation requires repetition several times. Veiel's instrument, as improved by Pick (Fig. 45), is on the same principle, and makes either punctures or cuts, and is well adapted for awkward corners, such as the angle of the nose and cheek and about the orbit, where Squire's instrument does not readily reach. The operation leaves scarcely any scar, and can be done either under local anesthesia or nitrous oxid gas, where the area is not very great. This method is as great an advance in the treatment of this obstinate disease as erasion is for L. vulgaris, and almost supersedes caustics, which are painful and uncertain in the depth of their action. In deep-seated cases erasion may be preferable, as it shortens the treatment.

Lassar prefers Paquelin's thermo-cautery or the galvano-cautery, scarifying lightly the affected area, so that only a thin eschar is produced, an antiseptic powder being dusted on after the operation. Only a small area should be done at one sitting.

Schiff removed nearly all the disease in a very extensive case by means of the Röntgen rays, which he employed for two months with an exposure of ten minutes a day. It is worth trying in a suitable case, but care must be exercised so as not to set up a suppurative dermatitis, using two to five ampères and a six-inch tube at a distance of about four to six inches. In one very obstinate case I obtained great improvement by continuing exposures until slight redness was produced, then soothing the inflammation, and when it had entirely subsided beginning again with the exposures. A very obstinate ulceration of the nose healed soundly under this treatment.

The Finsen treatment can also be used with great advantage sometimes, but in a much smaller proportion of cases than in lupus vulgaris, and permanence of result is much less likely to be obtained; but this is the same for any treatment. Limited

indolent cases—the "fixed cases," as Brocq calls them—are the most likely to be improved by it. Still better than either the Röntgen or the Finsen rays, according to Oudin and Brocq, are the *high frequency currents*, and if any large proportion of what is said of it is true, it will prove a great advance in the treatment of the most intractable form of case. Jacquet states in his thesis that in thirty-one cases in Brocq's clinic there were twenty-five cures. No other treatment hitherto brought forward can approach this, but it is unlikely that in anything like this number the cure was permanent. My own experience is at present too limited to speak of it first hand. *Radium-therapy* is mentioned in the treatment of lupus vulgaris.

Lupus Marginatus. This name has been given by Hutchinson to a disease which spreads up to a certain point and scars superficially, but in other respects differs from other forms of lupus. He records three cases.*

Two of the cases, a boy and girl, began in early childhood; the third, a woman, æt. forty, began when æt. thirty-four. The patches were circular or gyrate. They were abruptly margined, had papular borders, and showed a thin pale cicatrix in their areas. In the boy they were freely scattered over the lower part of the face, sparse on the forehead, and were not symmetrical. The circles and ovals extended in a streak down the ulnar border of the left forearm and side of the hand, and there were a few circles on the arm. The girl's had a similar distribution, but there were none on the face. About twenty rings were scattered over the woman's face. The papules of the border were not larger than a pin's head, and the scarring of the area very superficial, and there was no erythema. They were steadily but slowly increasing in size, but gave no trouble. There was a strong phthisical family history. The nosological position of the condition is doubtful, and it is placed here provisionally.

Lupus Telangiectodes Disseminatus. Majocchi† describes

*Hutchinson's Smaller Atlas, Plates XIII. and XIV., and *Archives*, vol. i. The cases are in *Clin. Jour.*, December 12, 1894, p. 114.

†*Berlin klin. Wochensch.*, May 14, 1894. Abs. in *Annales*, vol. vi. (1894), p. 151. Possibly Hutchinson's Lichen Lupus, Smaller Atlas, Plate CVIII., is an example.

a rare form of disease under this title. The extreme vascularity is its most distinguishing feature. There are numerous reddish or bluish-red ill-defined patches on which occasionally flat or slightly projecting papules develop. These tend to atrophy, while numerous small vessels, forming fine reticulations, ramify in all directions. The patient, a girl of twenty-three, had always suffered from chilblains. At sixteen the chilblains of the feet reached up to the lower third of the left leg, and formed numerous isolated papules, which had invaded two-thirds of the lower circumference of the malleoli. During the next six winters the disease extended over the whole leg and thigh and affected the other leg. When seen the eruption was limited to the lower limbs, principally on the outer side of the extensor aspect; they began at the top of the thighs and extended symmetrically to the ankles. They were made up of patches from the size of the palm to a drop or small coin, and were lenticular in outline. There were eleven patches on the right and six on the left leg. The smaller were bright or pinkish-red, the larger bluish-red. The skin was more or less infiltrated, but there was scarcely any projection. Round the patches, especially on the hips, there were distinct nodules of soft consistence and variable size. Near the papules, or where they had formed, were atrophic cicatricial depressions like lentils or drops, round or oval, and often surrounded by a slight pigmented areola, especially situated at the periphery of the large plaques. With a lens the patches showed fine dilated vessels, from which projected very numerous larger ramifications of a bright color, radiating from the center to the periphery, ending sometimes abruptly at the border of the patch, sometimes extending beyond it. According to De Amicis, the evolution, which is very slow, has an erythematous and telangiectasic period. At first bright red, later deep red spots appear. In the center of these a network of myriads of fine capillaries appear, and slowly spread, sometimes even to the periphery. In some spots develop irregularly and extend in the form of tufts or rays. The lupus spots are of a bright red color and do not disappear on pressure, and in some papules infiltration develops. The infiltrated vascular parts and the deep-seated nodes sometimes atrophy and leave superficial cicatrices.

SYPHILIS.

Synonyms.—Sibbens or Sivvens; Radezyge; Scherlievo; Mal de la Baie de St. Paul.

These names were given to unrecognized syphilis which occurred in an endemic form in Scotland, Norway, the east Adriatic coast, and Canada respectively. They are now almost disused.

Definition.—A chronic, specific, contagious, hereditary, and protective exanthematous disease, which may produce lesions in any tissue of the body, and is in many respects analogous to leprosy, but tends to get well.

Although this work is concerned mainly with the skin manifestations or syphilodermia, an outline of the early symptoms will not be out of place, as they must be taken into consideration in the diagnosis. The classification of the symptoms into primary, secondary, and tertiary periods of disease is convenient for description, and true in the main, although arbitrary and ill-defined in some respects, since the secondary and tertiary symptoms often merge into each other, and while, on the one hand, symptoms which usually occur late in the disease are occasionally among the early manifestations, on the other, some secondary symptoms recur at a late period.

The period of incubation, or the time which elapses between exposure to contagion and the development of the initial lesion, is usually three to four weeks, but the extremes are twenty-four hours (R. W. Taylor), and eighty-one days (Pusch).* There are, however, few cases which occur outside the limits of two to six weeks.

The initial manifestation may be: (1) A desquamating

* *Jour. des Mal. Cut. et Syph.*, July, 1890; Pusch gives many cases, including a case of ninety-seven days, but it was not quite conclusive—the girl had an intervening variola. Also abstract by Brocq, *Amer. Jour. of Cut. and Gen.-Ur. Dis.*, vol. viii. (1890), p. 492. Mackenzie Forbes of Montreal sent me an account of a case much longer than these, viz., from the beginning of October to March 7. The patient contracted gonorrhea at the same coitus, and it is suggested that the coincident urethritis delayed the syphilitic manifestation.—*Montreal Med. Jour.*, December, 1899.

papule; (2) a superficial erosion with indurated base; (3) an indolent ulcer with a hard base extending beyond the sore, "the true Hunterian chancre." In the case of a surgeon* who inoculated his finger in an operation by a direct blood inoculation there was no primary sore, but the first symptoms began twenty-six days afterwards and the macular rash on the thirtieth day.

In at least ninety per cent. of all cases the initial lesion is on or about the genitals, but there are few parts of the body on which it is not recorded to have occurred. In estimating the value of a negative history, it is important to remember that the primary lesion and the early symptoms may be so slight as to be unnoticed or soon forgotten by the patient. The next phenomenon to the sore is the enlargement of the lymphatic glands in the neighborhood and even elsewhere, which usually begins about ten days after induration round the sore, and may not entirely subside for a year or more. Between the time of the appearance of the initial lesion and the general eruption there is a period of quiescence of from 40 to 50 days as a rule (with extremes of 25 to 160 days), or a month or six weeks after the enlargement of the lymphatic glands.

Symptoms.—Some of the following symptoms of general disturbance usually, but not always, precede the rash in a varying degree of severity: transitory shivering and pyrexia, with the usual concomitants, malaise, languor, anorexia; marked anemia with its usual symptoms; pains and tenderness of all the superficial bones, especially the clavicles, ulnæ, and tibiæ; headache, often unilateral, and most intense and distracting; neuralgia, especially about the orbit; rheumatoid pains of the muscles, joints, and even ears, and occasionally epileptiform fits, temporary insanity, or various motor or sensory disturbances, in one case severe itching;† all these symptoms being aggravated at night. The fever is present in a large proportion of cases, and may be dependent or independent of the rash. The independent form occurs in from six to nine months after infection,

* Recorded by Jullien in Neumann's "Festchrift." Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 390.

† Case recorded by L. Derville. The itching preceded the eruption, which was at first purpuric for a fortnight and persisted for another two or three weeks. There was albuminuria. Full abs. of case, *Brit. Jour. Derm.*, vol. ix. (1897), p. 175.

and may be continuous, intermittent, or irregular. In the other kind the temperature is not generally high, but may reach 104° F. or 105° F. in the evening, with a morning fall of 2° or 3° and even 6° (B. Yeo's case), and a pulse not exceeding 120 just before and during the development of the rash, the pulse falling as soon as the rash is all out.* The fever may precede the eruption by three or four weeks. In a few cases the outbreak of each crop of eruption is preceded by fever.

On the other hand, it must be borne in mind that in many cases the general symptoms are quite insignificant or absent.

Concomitant Symptoms.—The most common symptoms during the early eruption period—*i. e.*, the first year of disease—are the primary sore or its scar; the enlarged inguinal, and often cervical and occipital glands; the throat, at the least, congested and angry-looking, and often ulcerated; there is often very little pain unless the ulcer is in a position where it is stretched in swallowing; itching of the fauces is sometimes experienced; mucous patches or superficial ulcers in the mouth and on the tongue; alopecia and lusterless appearance of the remaining hair; and perhaps double iritis. At a later period, while in an average case, which has been properly treated, the tendency to eruptions is less, there may be superficial glossitis and stomatitis, and the signs of the previous lesions, whether in the skin, eye, mouth, throat, etc., alopecia differing from the early kind, and an increased tendency to gummatous deposits in or inflammations of the bones, viscera, nervous system, or testicles, especially of their coverings, *e. g.*, periosteum, capsule of the liver, meninges, etc.

The following tables (pp. 838-41), transcribed from Hutchinson's Illustrations of Clinical Surgery, give a bird's-eye view which will assist the student to get a comprehensive grasp of this complicated subject.

* *Lancet*, Annotation, July 27, 1901, résumé of paper by Futcher with several cases. One case was tertiary.

SCHEME OF THE COURSE, STAGES, AND SEQUELÆ OF ACQUIRED SYPHILIS. ANTIDOTAL TREATMENT SUPPOSED TO BE ABSTAINED FROM.
BY JONATHAN HUTCHINSON, F. R. S.

Incubation period. Usual duration 3–5 weeks.	From date of contagion to first sign of induration of the sore. Condition of the site of inoculation variable according to the purity of the poison. If syphilitic virus free from pus, probably little or no irritation until just before induration, when the spot would become for the first time red and itchy. If, as is usual, pus be mixed with virus, a soft sore may be witnessed almost from the first. The soft sore has a specific microbe, according to some.
Development period, or *Stage of Primary Symptoms.* Lasts usually from 2 to 4 weeks.	From first appearance of induration to full development of secondary symptoms, rash, fever, and sore throat. It is usually the first part of the exanthem stage. Exanthem usually takes from two to four weeks to attain full development. The symptoms are one or more indurated sores and glands in groin. The latter usually not inflamed.
Stage of Secondary Symptoms, or Exanthem period. All the symptoms in this stage are usually general and symmetrical. Duration from a fortnight to 8 months or more.	The induration of sore having lasted for two to four weeks and still persisting, the patient is liable to following symptoms, not all, or indeed any being necessarily present. Slight fever, rise of temperature, headache, more or less malaise; aching in joints and bones with little swelling. Roseolous eruption on trunk, followed in a few days or weeks by an eruption of papules, pimples, or blotches, which sometimes ulcerate and become rupial; ulcers on the tonsils, usually with white borders and slight superficial sores on the pillars and velum of palate; condylomata in throat, on tongue, or at arms; iritis; retinitis, with implication of the vitreous; loss of hair; slight general enlargement of lymphatic glands.
Post Exanthem Period = Stage of Latency with reminders.	The general health is restored, but in exceptional cases the patient remains liable to sores in the throat, bald patches or sores on the tongue, palmar syphilid, etc. Sometimes the second-

SCHEME OF THE COURSE, STAGES, AND SEQUELÆ OF ACQUIRED SYPHILIS. ANTIDOTAL TREATMENT SUPPOSED TO BE ABSTAINED FROM. BY JONATHAN HUTCHINSON, F. R. S.—*Continued.*

The symptoms in this stage are only exceptionally symmetrical. It extends from the cessation of the secondary to the beginning of the tertiary.	ary skin eruption is never wholly got rid of, but if so it always becomes irregular. Sometimes there are deep or even phagedenic ulcerations, and sometimes a peculiar form of relapsing punctate retinitis is seen. Chronic sarcocele may occur. The patient may beget healthy children.
Tertiary stage. Period of remote sequelæ. In this stage the symptoms are very rarely symmetrical. It begins from 3 to 5, to 10 or even 30 years after the secondary stage.	Gummatous swellings in cellular tissue, periosteum, or muscle, which may ulcerate and spread deeply. They are persistent, and show no tendency to spontaneous cure. Diseases of the nervous system (arterial disease, or gumma) are frequent, and affections of the viscera occur. The tendency to phagedenic inflammation, which may be seen at any stage of syphilis, is also frequent now.

CHRONOLOGICAL STATEMENT OF EVENTS DURING THE FIRST YEAR OF ACQUIRED SYPHILIS. NO MERCURY GIVEN.

1st month.	*Date of Contagion.* A little pustule or abrasion, lasting a few days, and then healing and perhaps forgotten. Nothing to be seen, or perhaps a soft sore, secreting pus.
2d month.	An insignificant pimple, or perhaps nothing. An itching red papule which begins to indurate. Induration increasing. Induration well marked.
3d month.	A roseolous rash; chancre very hard; bullet bubo in groin. Papular, scaly, or pustular eruption, sores on tonsils, and other secondary symptoms.
4th month.	Rash and other secondary phenomena continued and aggravated. Iritis or retinitis may occur.
5th month.	Secondary symptoms continued in some cases, disappearing in others. Chancre and bubo beginning to diminish. Iritis or retinitis may occur.

CHRONOLOGICAL STATEMENT OF EVENTS DURING THE FIRST YEAR OF ACQUIRED SYPHILIS. NO MERCURY GIVEN.—*Continued.*

6th month.	Secondary symptoms continued. Repeated crops of eruption. Chancre probably gone; in many cases, patient quite well.
7th month.	Secondary symptoms continued, or beginning to fade.
8th month.	Secondary symptoms slowly diminishing or perhaps recurring repeatedly.
9th month.	Patient probably well, but possibly still with rash out; liability in certain cases to palmar syphilid, sores in throat, and irregular eruptions in skin.
10th month.	Same as ninth, but probably symptoms diminished.
11th month.	Symptoms still diminishing, if any.
12th month.	In majority, patient well for several months; in a few, still with sore throat, sores, and irregular eruptions. In exceptional cases secondary symptoms still severe.
	The period of latency or reminders now begins, after which, at a very uncertain date, tertiary symptoms may follow.

CHRONOLOGICAL STATEMENT OF THE COURSE OF SYPHILIS.

1st year.	Infection, indurate sore, bullet bubo, rash in two months. Roseolous eruption; gray-edged sore in tonsils; febrile disturbance; rheumatoid pains in joints; papular rash; possibly ulcerating iritis; sores in mouth; condylomata at arms, and on tongue; loss of hair.
2d year.	Unless severe case, probably free from exanthem symptoms. Perhaps superficial sores on palate and tongue; palmar syphilid, etc.
3d year.	Probably well. Rarely liable to choroiditis disseminata, and diseases of cerebral arteries leading to paralysis. Relapses of second symptoms, more especially phagedena; sores on skin and mouth.

CHRONOLOGICAL STATEMENT OF THE COURSE OF SYPHILIS.—*Continued.*

4th year.	Probably well. If a man has been two years free from symptoms, may be allowed to marry. Risks as in third year.
5th year.	Probably well. Liability to syphilitic orchitis, palmar syphilid, acne (scarring), necrosis of bones in nose, etc., is now perhaps at its greatest.
6th year.	Probably well. Same liability as in fifth year.
7th year.	Probably without relapse. Increased risk of gummata in cellular tissue, periosteum, nerves, and meninges.
8th year.	Large majority of patients keep well from beginning of second year. His liabilities to the above maladies of the seventh year increase.
9th, 10th and 11th years.	Perhaps increasingly liable to the events of seventh year.
12th and onwards.	Still and always liable to late tertiary symptoms, however latent the disease may have remained.

Malignant Syphilis.—This term is often loosely applied to almost any severe case of syphilis, but I agree with Neisser and Haslund * that it should be restricted to secondary syphilis, where there are, as laid down by Neisser:

Severe constitutional symptoms indicative of toxin action; extensive and irregularly distributed lesions of the skin and mucous membranes, of a pustular and ulcerative character, especially attacking the head and face; the ulceration being an early symptom, in some cases replacing the roseola, in others developing on deep-seated, rapidly growing, reddish-brown syphilomata, in either case soon reaching its limit and not spreading serpiginously; the evolution and disintegration of the lesions being very rapid. He adds pleomorphism, but that is a feature of all marked secondary eruptions. The lesions of the mucous membranes may sometimes be mild while the skin

* At International Derm. Cong., 1896 (p. 659 of *Trans.*), a discussion was opened by Haslund, Tarnowsky, and Neisser.

lesions are severe or *vice versa*, but more frequently destruction of the septum nasi and severe affections of the larynx are concomitants. Hemorrhage and gangrene of the lesions, while they are frequent aggravating complications, do not of themselves indicate malignancy, as they may also occur in otherwise mild forms. It is noteworthy that milder forms of eruption, such as typical macular and papular lesions, sometimes follow the ulcerative lesions; and finally, mercury must be given with the greatest caution, as it sometimes not only fails to heal the lesions, but may be actually injurious. They also do not respond to iodids like the ordinary tertiary lesions.

Tarnowsky includes all phagedenic forms with malignant syphilis, and also cases which are dangerous on account of localization, like early cerebral syphilis, and some authors include severe tertiary cases, especially when developing early in the disease; and Fournier considers the above described early ulcerations as evidence of precocious tertiarism, but there may also be nodes, caries, and early visceral lesions within a few weeks of infection. The cause of this malignant course is still in dispute, but the balance of evidence goes to show that it is the soil rather than the seed or the quantity of it which is at fault, though there may be no recognizable cachexia in the victim.

Cutaneous manifestations.—Syphilitic eruptions are very numerous, and are often named after the non-specific rashes, which they may resemble more or less closely, *e. g.*, syphilitic eczema, psoriasis, lichen, etc.; but since their clinical differences are greater than their resemblances, and their pathology quite different, this nomenclature leads to confusion, and the nature of the elementary lesions, whether erythema, papule, pustule, or bulla, as proposed by Cazenave, is the foundation of the modern nomenclature.* The following classification is pathological:

I. Circumscribed hyperemia, with slight infiltration:
Macular. Erythematous.

II. Marked infiltration of the papillary body:

Papular, variously modified.
1. Dry papular.
2. Squamous, patchy, or circinate.
3. Lenticular or large papule.
4. Moist papular, or mucous tubercles.

*This arrangement is slightly modified from one proposed by Sangster in *Lancet*, December 1, 1883.

III. Especial implication of the hair follicle or its immediate neighborhood:

Follicular, of progressive severity.
- Miliary papular or follicular { large. / small.
- Miliary papulo-vesicular.
- Miliary papulo-pustular.
- Acneiform.

IV. Infiltration with subepithelial suppuration and superficial ulceration:

Varicelliform and Varioliform.

Ecthymatous. { superficial. / deep.

Bullous. { rupia. / pemphigoid.

V. Gummatous infiltration with tendency to ulceration:

Nodular syphilids.

VI. Extravasation of blood constituents:

Pigmentary syphilid (coloring matter only).

Purpuric (blood).

Deep phagedena or ulceration may occur in the primary, secondary, and tertiary lesions.

General Character of Syphilids.—The secondary eruptions are bilateral,* and in the main symmetrical, tending to be distributed over a wide area of the body surface; and while no part is exempt from them, they show some preference for particular regions, but never, like psoriasis, for example, affect distant points, leaving the rest free or nearly so. The localities chiefly favored are the forehead, especially where it joins the scalp ("corona veneris"), the lower part of the face round the mouth, the margins of the nostrils, the nape, the trunk, the flexor aspect of the limbs, especially the palms and soles, while the backs of the hands and feet usually escape. In their localization they often contrast with non-syphilitic eruptions, which they may resemble in appearance. Many of the lesions tend to be arranged in circles, and some others in irregular and occasionally herpetiform groups. The color is bright red at first, and it is often not till the eruption has been out for a few days that the well-known dull red tint, which is usually termed coppery, but which in most instances is of the tint of a raw ham,

* T. Falcone records [abs. *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 425] a case where all the lesions, pustular, scaly, and roseolar, were entirely confined to the right side in a man of thirty-two. No cause was ascertained.

is developed; later still it becomes brownish or yellowish-red, and ultimately stains of a more or less pronounced fawn or brown color are left. The lesions frequently change their appearance, *e. g.*, papules develop into vesicles or pustules on the one hand, or spread into squamous patches on the other; as a rule, the whole eruption does not come out at once, but gradually, and so it happens that all stages, from the beginning to the end, may be present together. Moreover, the variety of eruptions is as great as the number of elementary lesions to which the skin is liable; several of these are often associated or overlap one another, and, from these various circumstances, the important feature of "polymorphism" is produced, so that a polymorphous, non-pruritic eruption is almost characteristic of syphilis. Subjective symptoms, such as itching, burning, or pain, are often absent, and never conspicuous; but moderate itching is not uncommon when the eruption develops acutely, or is in warm situations like the perineum or scrotum. The course is, as a rule, slow, both in development and retrogression, and they have a great tendency to recur.

These peculiarities of symmetry, position, arrangement, color, variability, polymorphism, pigmentation, and absence of subjective sensations constitute a group of symptoms which, when taken together, enable a diagnosis to be made without further difficulty in most cases, but there is no more common source of error than that of depending upon one or two such indications, without taking the whole of the circumstances modifying disease into account. Jullien advocates the inspection of the eruptions through cobalt blue glasses, and says that by their means the syphilid may be recognized at an early or late stage when they could not be seen by ordinary vision.

Tertiary syphilids, as a rule, occupy only a limited area, are non-symmetrical, and while possessing some preference for such parts as the face and scalp, the palms and soles, round the knee, etc., the seat is often determined by some local irritation. On the trunk they sometimes have a zosteriform distribution.

There is, as a rule, compared with secondary eruptions, greater infiltration of the affected tissues, and a readiness to break down and produce scars, either by atrophy or ulceration, the latter taking a circinate form. They are mono-

morphous, of squamous or of gummatous character, possess but little tendency to spontaneous recovery, and are apt to recur, but are always very amenable to treatment.

Pathology.—It has long been an inference that syphilis is a bacillary disease, and the discovery of lepra and tubercle bacilli has strengthened it.* Nevertheless, although micrococci or bacilli have been described by numerous observers in connection with syphilitic lesions, none of them are accepted generally as the pathogenic agent, and the matter, therefore, is still *sub judice*. De Lisle and Jullien, in 1901, are the latest claimants on the following grounds:

1. They have found the microbe in cases of active syphilis only. 2. The microbe agglutinates the serum of syphilitic subjects, and not of others. 3. In animals it causes special lesions comparable to those found in man. 4. It fixes the alexine of animals inoculated with syphilitic products. 5. Cultures have no effect on syphilitic subjects. 6. As in syphilis of man, the microbes die with the infected animals. The bacillus is polymorphous, varying from five to eight μ in length to an elongated filament. It is mobile, and can be colored by ordinary stains, but not by Gram's method. It is found in plasma and blister fluid, but not in the blood, owing to the presence of alexine, which is a bactericide, in the serum of coagulated blood.

Ward suggests that the phenomena of syphilis are produced by the toxins of a bacillus.

Anatomy.—The anatomy of syphilitic eruptions has been examined by Biesiadecki, Auspitz, Neumann,† Kaposi, Cornil, Unna, Ehrmann, myself, and others, with general agreement as to the results in all the main points.

With the exception of the erythematous eruption, in which hyperemia with comparatively slight cell infiltration are the main changes, all syphilids are characterized by a dense, pretty uniform, at first circumscribed, round-cell infiltration inclosing the vessels. The process affects primarily, and mainly, the papillary body, and later, the deeper part of the corium, and secondary changes involving the epidermis, and even the subcutaneous tissue. The raw-ham color is derived from the escape of blood-coloring matter of wandering or extravasated red corpuscles,

*"Bacteriology of Syphilis," *Jour. des Malad. Cut. et Syph.*, July, 1901. Good Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 441.

†Neumann's investigations contain a review of previous work on the subject. See *Viertelj. f. Derm. u. Syph.*, 1885, with numerous plates. Unna's "Histopathology" should also be consulted.

though the bulk of the infiltration is due to plasma cells and spongioblasts (Krzysztalowicz); mast cells are also abundant in all syphilitic lesions. An important point, on which Kaposi lays much stress, is that the cells never organize into connective tissue, but undergo retrogression, and disappear either by absorption or suppuration. This retrogression always commences in the center or oldest part (Virchow denies this) even, though, at the periphery, fresh infiltration may be simultaneously taking place; hence the circinate form so often assumed, especially in the later lesions.

A papule is at once the type and starting-point of all other lesions; a large papule or a nodule is only an extension of the process that produced a small one; a slight increase in intensity will produce more fluid exudation in the epidermis, which is raised up, and a vesicle is formed on the papule as a base, or, if the intensity is greater still, a pustule is developed. When the lesion is large, or the cell exudation very closely packed, as in gummatous infiltration of the skin, the vascularization of the mass is obstructed, and it disintegrates, breaks down, and an ulcer is produced; but in the early eruptions the connective and elastic tissues are dissociated but not destroyed. Giant cells have been found in gummata, and also in nodular, follicular, and acneiform syphilids.

An important practical point, established by Neumann's observations, and amply confirmed by Hjelmman,* is that the diseased products, mainly exudation cells, persist in the tissues, though in diminished quantity, for from four to eight months at least after the disappearance of the clinical symptoms. The cells, which may be spindle-shaped and pigmented, affect chiefly the vessel walls, hair follicles, sebaceous glands, and sweat ducts, but the upper cutis layer may also be infiltrated, and perhaps granularly clouded. There may also be thickening of the vessel walls and follicles. It is not possible to say how long these products persist, but their observations lend a strong support to Hutchinson's doctrine "of residues of the early period of syphilis, being the starting-point of later lesions." With regard to pigmentation, when that affects the exudation cells only, the duration is comparatively short, but where the connective-tissue cells are pigmented the duration is very long, and may be permanent.

Justus and Konried have shown that there is a great fall in hemoglobin, commencing when general adenitis is established, and becoming lowest when secondary manifestations occur. This may be restored by mercury, but the blood also tends to recover spontaneously.

The **Erythematous or Macular Syphilid, Syphilitic Roseola or Exanthem** (Plate I., Fig. 1) is the earliest of the skin manifestations; it is very rarely absent, but, being often inconspicu-

* This observer found that cell infiltration was still present from half to three years after the hard sore was macroscopically healed, that in roseola it only lasted a month, and in dry papular syphilids it lasted six months, and in moist papules twelve months. *Archiv f. Derm. u. Syph.*, vol. xlv. (1898), p. 57.

Fig. 1. Macular.

Fig. 2. Papulo-Squamous.

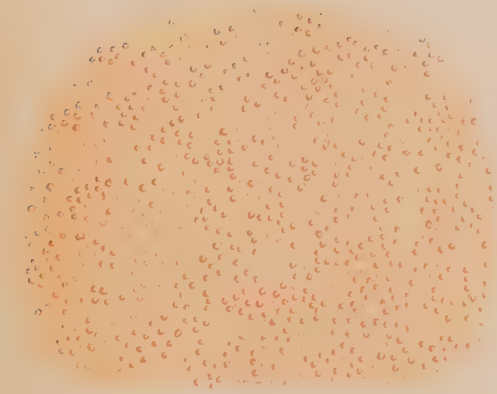


Fig. 5. Small Follicular.

Fig. 6. Papulo-Pustular.

Fig. 9. Rupia.

Fig. 10. Tubercular.

Fig. 3. Circinate

Fig. 4. Large Follicular.

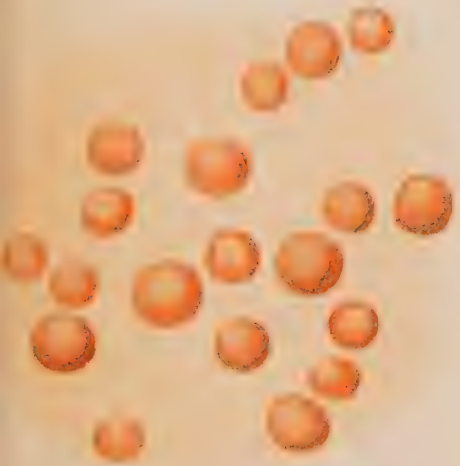


Fig. 7. Large Papular or Lenticular.

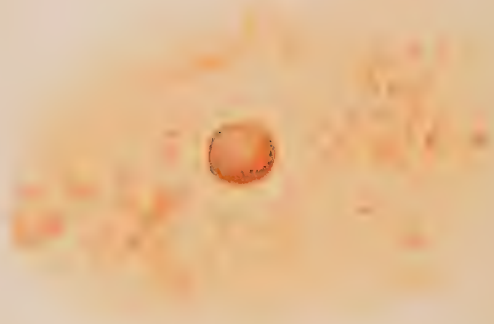


Fig. 8. Corymbose.

Fig. 11. Pigmentary.

Fig. 12. Late Squamous of Palm.

ous, or mingled with other eruptions, and unattended by subjective symptoms, may be overlooked by the patient. It usually comes out six or seven weeks from the first appearance of the initial lesion, taking, as a rule, a week or ten days for its full development, but may break out acutely in a single day, if congestion of the capillaries of the skin is produced by violent exertion, hot baths, or alcoholic excess, and there may be slight heat and itching. It may appear as a diffused mottling or marbling of the skin, very like that often seen on covered parts, when exposed to the air, in spots the size of the finger tip, or as small as one-eighth of an inch in diameter, with ill-defined and irregular borders. In a few cases the lesions are raised up like a pink wheal, but without itching, "the *wheal* type" as it has been called. They evolute gradually,* persist for weeks, and leave stains, and there is seldom any itching. The color is a bright rose pink at first, completely removable by pressure, but very soon it gets duller, or even purplish in hue, and after pressure there is still a yellowish tint; ultimately the macula fades into a dirty yellowish or grayish-brown stain, which remains long after the exanthem itself has gone, but there is seldom desquamation. The favorite localities are the front of the trunk, especially the chest and epigastrium, the flank, the back, less commonly the upper segment of the limbs, or the wrists, somewhat more upon the flexor than the extensor aspect. Occasionally it is very widely spread over the body surface, but even then the face often escapes, or it only affects the forehead and round the mouth. In rare instances it begins on the face. Febrile, and some of the other symptoms mentioned, generally precede the eruption, and it is seldom indeed not to find corroborative symptoms, such as redness or ulceration of the fauces, gland enlargements, bone-pains, etc. In five cases out of six (Bassereau), other forms of eruption also, chiefly the papular, will be present, and prevent error in diagnosis which might arise, especially with the papular rashes of measles,

* Klotz read a paper with references on this "wheal type" in which the resemblance is only in form. *Amer. Derm. Assoc. Trans.*, 1900, p. 159. I have met with cases in which, in the first six months of syphilis, brownish-red wheals came out suddenly, lasted several hours to a day or two, did not itch, and left faint stains. Slight but distinct urticaria factitia was present, and there was constipation. This was therefore an urticaria in the course of syphilis, and not a syphilid.

rötheln, urticaria with pink wheals, various erythematous eruptions, idiopathic, symptomatic, or medicinal, if regard be had to the skin lesions alone. The position on the trunk, while the face, the backs of the hands, and wrists, which are favorite positions for most erythemata, are free; the absence of itching, and later on the stains, are further important aids. Tinea versicolor can only be mistaken by a careless observer, for the stains of the macular and other syphilids are *in*, and not on the skin.

The duration varies from one to four weeks, but slight relapses of limited duration, chiefly on the forehead and chest, sometimes occur in the first year, and a smaller or circinate form may occasionally appear in the second or third year of disease.

Tertiary circinate erythema (Neuro-syphilid of Unna).—Fournier * has drawn attention to a late syphilitic roseola, consisting of rounded, oval, or irregular, very superficial rings or patches of a rose color at first, later getting a brownish-red tint, paling on pressure; the patches tend also to clear in the center, while fine branny scales cover the peripheral portion. It is rare,† often unassociated with other tertiary symptoms, responds very slightly to internal treatment, and shows a great tendency to recur. I have seen it as a late secondary. Étienne met with it at an early period with other secondary eruptions. The rings are few in number as a rule, may be several inches in diameter, and seem to be analogues of those seen in leprosy.

Anatomy.—The anatomy of the ordinary macula has been investigated by Biesiadecki, Kaposi, Neumann, and myself. The result of my investigation is as follows: The change is limited almost entirely to the upper layers of the corium, mainly the papillary, in a rather sharply defined area. The epidermis is raised up as a whole, but the cells of the horny layers and rete are normal as a rule, except where the effusion is greatest and stretches them. Here there may be some elongation of the lowest cells, which may even be so disturbed that the defined line at the junction of the epidermis and papillary layer is lost, the papillæ are more or less

* Fournier, *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1141, is one of his most recent papers on the subject.

† Nielsen denies this, having seen twenty-four cases, chiefly in a hospital for prostitutes, Copenhagen, but most people agree with Fournier. *Monatsh. f. Derm.*, vol. xxii. (1896), pp. 500 and 555. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 86. There is a model of this lesion, Mus. of Coll of Surg., No. 204, Dermat. Catalogue.

flattened out, the fibers of the corium are separated, presumably by the fluid effused, so that the individual fibers can be made out. The contrast between the upper part of the corium, with its separated fibers, and the normal corium below, is very distinct, but there is only moderate leukocytic infiltration, and this is almost exclusively round the vessels of the superficial plexus with their papillary branches; the capillaries and small arteries are moderately dilated, and both stuffed and surrounded with cells; in the walls of the capillaries are prominent nuclei, and there are round and spindle cells in the adventitia of the larger vessels, as was first described by Biesiadecki. There is a slight cell effusion round the hair and sebaceous follicles, and sweat ducts, where they lie in the upper part of the corium, but the sweat glands, and all the structures in the deep part of the corium, are normal. Kaposi saw caudate cells in the connective tissue of the papillæ—indicative, he thinks, of proliferation of the connective-tissue cells; and Neumann affirms that the change goes right

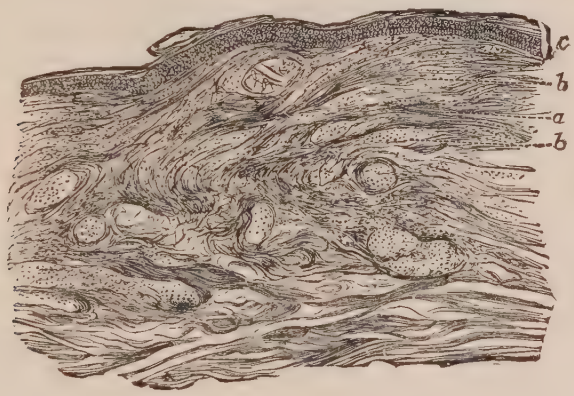


Fig. 47.—Part of a syphilitic macula. × 125.

a, connective-tissue bands of the corium separated by the cell effusion, *b*, *b*, which is chiefly in foci in the course of the vessels. In the upper part of the corium the individual fibers are separated by the inflammatory effusion, and the papillæ are flattened out. *c*, normal epidermis.

down to the fat, but this was certainly not the case in the macula I examined. As all the structures of the skin in his case appear to have been more affected, especially the hair-sacs, muscles, sebaceous and sweat glands, than in the cases of Biesiadecki, Kaposi, and myself, possibly his patch was of longer duration. Neumann also observed granular pigment in the upper part of the corium, but only in the exudation cells.

Papular Syphilids are of two classes, according to whether they are formed round a hair follicle or independently of it. The non-follicular are formed by the papillary infiltration raising up the epidermis, and are flat or lenticular, and of two

varieties, *large* and *small*. The follicular are situated round the mouth of a hair follicle, are conical, and are often termed miliary or lichenoid. Here also there are two varieties, *large* and *small*. The small flat papular syphilid is a mixture of papules and scaly patches; it is best known as the papulo-squamous syphilid, and the circinate scaly syphilid is a variety of it.

The large, flat papular syphilid has large, disseminate papules, not scaly as a rule, and is especially, from its shape, entitled to the term "lenticular," though that name is by some authors made to include both forms, and is used by B. Hill for the small flat papules in the scaly collar stage.

Syphiloderma Papulo-squamosum (Plate I., Fig. 2). *Synonyms.*—Small, flat, papular, nummular, or squamous syphilid; Syphilitic psoriasis.

This is seen at any period of the first, and occasionally in the second year of the disease, and is one of the commonest of the syphilids. According to the stage of the eruption, one or other of the above names is applicable. Commencing as a small, bright red, flat papule, it extends peripherally, and desquamates at the apex; when this scaly cap is thrown off a characteristic collar of loosened scales is formed from a quarter to three-quarters of an inch in diameter, seldom larger, and according to the age of the patch, of a bright or dull brownish-red or yellowish-brown color, or, on the legs, occasionally purplish-red. The scales are usually scanty and dirty-looking, but sometimes rather abundant and silvery, but never so much as in true psoriasis. This scaly eruption is the stage most frequently brought under notice, to which the terms nummular and squamous are suitably and psoriasis erroneously applied. The eruption usually comes out in crops, and while, as a whole, it may last for months if untreated, many of the patches undergo spontaneous involution, leaving fawn-colored stains, and all stages of the eruption may thus be present together and form a very characteristic picture. The distribution is often very extensive. No part is exempt from liability to it; it is often all over the trunk and limbs, predominating on the flexor aspects, on the face, especially on the forehead, at the margin of the hairy scalp (corona veneris), and on the lower part, round the

mouth and nose. Occasionally it forms herpetiform groups, even unilaterally. The patches, as a rule, though often closely set, remain discrete, but may coalesce in parts like the lower part of the face, round the perineum or genitals, etc., but these areas will still present traces of the constituent patches (*en nappe* aspect of French authors). Slight itching is not uncommon at first, but it is never a very prominent symptom.

Diagnosis.—It is distinguished from most cases of *psoriasis* by its predominance on the flexor aspect of the limbs, and by

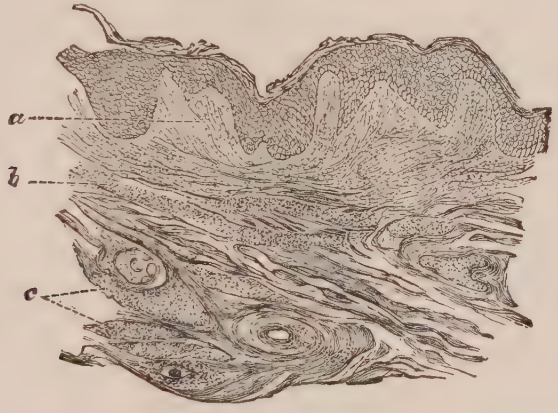


FIG. 48.—Papulo-squamous syphilid from the bend of elbow. × 125.

a, enlarged papilla, free-cell exudation separating connective-tissue fibers; *b*, exudation-cell masses round vessels; *c*, similar cell masses round a hair follicle and in wedge-shaped foci in the deep part of the corium. The epidermis is thickened with downgrowth of the interpapillary part. The greater part of the scales has fallen off in the preparation.

the uniform small size of the patches; but these criteria fail for guttate psoriasis, from which it may be distinguished by attention to the following points: The syphilid is most common on the flexor aspect of the limbs; there are never widely distant foci of disease with healthy skin intervening; the patches are pretty uniform in size, and distinctly raised above the surface; the scales are usually scanty and dirty-looking and easily detached, and are never abundant enough to conceal the color of the patch, which is of a duller red than that of psoriasis; brownish stains are left, and are often intermingled with more recent scaly patches; there are no bleeding or red points when the

scales are removed; the palms and soles are often attacked; itching is slight or absent, and other forms of eruption, or at least, other symptoms of syphilis, are sure to be present. In psoriasis, the eruption is mainly on the extensor aspect, at widely distant points, *e. g.*, elbow, knee, and scalp; the scales are abundant, silvery, and firmly adherent, concealing the bright red patch, and when removed, bright red or bleeding points are visible; there is little or no staining left after the eruption, except when arsenic has been given, when the brownish staining of a syphilid may be imitated; and the general health is usually unaffected. The cachexia, the absence or slight degree of itching, and the early desquamation, with little, if any, tendency to vesiculation, distinguished the early papular stage from *papular eczema*.

Anatomy.—I found the following changes in a **squamous plaque** (Fig. 48) a quarter of an inch in diameter, removed from the bend of the elbow of a man who had had a chancre three months previously.

The upper half of the horny layers had desquamated, the rete was thinned in some places and thickened in others; the thinned part was where the process was most acute; the outline of the lowest part of the rete was irregular from loosening of the lowest cells, which were vertically elongated, but attenuated. Where the rete cells had proliferated and the whole become thickened, the sharp definition of the boundary line between the rete and papillæ was preserved, and the rete processes were broader, as well as elongated.

In the more acute part the papillæ were enlarged laterally and vertically, the fibrous structure was obscuted with amorphous granules, and the round cells present in only moderate numbers; the effusion of serum and leukocytes was greatest in the papillæ, getting gradually less toward the horizontal plexus, but not ceasing there entirely. Here and there small collections of round cells were to be seen deep in the corium, *e. g.*, round a vessel communicating with the deep and superficial plexuses, between the acini of a sweat gland, or round the base of a hair follicle, though these structures were not as a rule affected in their deep part. Then it was common enough to see cell infiltration between the angle of the rete, and a hair follicle or sweat duct, sometimes on one side only, pushing the hair over almost parallel to its arrector muscle, whilst, when on both sides, it often extended downward for a considerable distance.

Syphiloderma Circinatum (Plate II., Fig. 3). *Synonyms.*—Circinate, orbicular, or annular syphilid, or lepra syphilitica of old authors. This is another form of squamous eruption of the secondary period, but is much less common, and usually later than the small patch form, of which it may be the relapsing representative in the second year, or even several years after

infection; but its most common period is in the first five or six months to the end of the first year of disease, and it may be quite early. It may appear upon any part of the body or head, but the favorite positions are the nape and other parts of the neck, forehead, and round the mouth and chin. In form it is in circles from half an inch to an inch in diameter, or, by coalescence of two or more rings, in gyrate figures with clear centers and sharply defined, distinctly raised borders, about an eighth of an inch wide, dull, or yellowish-red after the first few days, and moderately scaly as a rule, but sometimes crusted with silvery scales, and, except for its position, very like the ringed forms of psoriasis. The distinctions are the same as those already mentioned in small patch syphilids, especially the cachexia, together with the presence of the eruption in parts where psoriasis is seldom seen. The occipital glands are almost always notably enlarged. Both this and the nummular form relapse more frequently than the follicular syphilids; but, as a rule, the older the disease the less extensive is the rash.

This form especially, in Unna's view, is the outcome of a combination of the seborrheic process and syphilis—a combination which he considers is very common, and exercises an important influence in determining the character and position of so many syphilitic eruptions. That syphilis predisposes to seborrhea capitis has long been recognized, but few go so far as Unna in acknowledging the converse influence in so many syphilids.

On the *palms* and *soles* the appearance of the eruption is considerably modified by the anatomical peculiarities of these parts, and is often called psoriasis palmaris or plantaris. In the secondary period it is usually symmetrical, generally occurs in the second year of the disease, but may be quite early in the first year; when very early, it is the more likely to form only part of the general eruption, or to be associated with other distinctive symptoms.

It begins as a coppery-red spot, seen through the translucent epidermis, but not always perceptible to the touch; the epidermis over it first thickens, gets opaque, gives way, and forms irregular cracks, and has a worm-eaten aspect, or is thrown off *en masse*, without splitting up into lamellæ, and leaves a tender area below the general surface inclosed by a jagged collar of epidermis; or fissures may form in the course of the natural deep

lines of the palm, which are sure to follow their direction, and often go quite down to the corium. A somewhat similar squamous eruption may be seen in the tertiary period, often constituting the sole manifestation of the disease, after perhaps many years of freedom from the symptoms, and this in married women who have never shown any previous specific symptoms. Being often determined by local irritants, it is very likely to be unilateral, and is most common in those who have to do manual labor. It almost invariably begins in the center of the palm, consists chiefly of thickened epidermis, which readily splits into deep, painful fissures, chiefly following the direction of the natural folds. On the foot it is often associated with papillary hypertrophy.

Diagnosis is seldom difficult. In the secondary period the presence of other characteristic eruptions and symptoms, and its symmetry and amenability to specific treatment, would remove all doubt; but some of the circinate seborrheic eczemaform eruptions at the hair borders front and back, and on the face, rather closely resemble the orbicular syphilid. There would always be abundant seborrhea with or without accompanying inflammation, and of course the other symptoms of syphilis would be absent. These criteria hold good when the syphilid is present as a late secondary eruption, but when all other specific symptoms have long ceased to trouble the patient, and the remembrance even of his old enemy has faded away, neither the diagnosis nor treatment is easy. *Eczema palmare* is often very like it. Here, too, there are great thickening of the epidermis and deep, painful fissures; but while the syphilid nearly always begins in the center of the palm, eczema rarely does so, being generally at the wrist or root of the thumb, and reaching the palm later. *Simple psoriasis* is rare on the palms or soles, and very rare without the typical eruption elsewhere; there is less thickening or fissuring, and no special tendency to begin in the center of the palm.

Anatomy.—In the border of a circinate syphilid (Fig. 49), on the tip of the elbow, which came about six months after the chancre, and in which there was free scaling very like psoriasis, there was great increase of the horny layers, which were almost completely thrown off, in many of the sections leaving only a few lamellæ still attached to the rete. There was also an increase in the thickness of the stratum granulosum.

The upper part of the scaly crust was homogeneous with closely compressed layers, but the deeper portion was of looser structure, and in the picro-carmine sections could be seen to be permeated with minute rounded bodies both scattered and in masses, which stained with carmine and contrasted sharply with the yellow picric-acid-stained horny layers. In the rete there was marked proliferation of its cells, and not only was it thickened, as a whole, but the interpapillary processes were

FIG. 49.—Circinate squamous syphilid. × 125.

a, horny layers forming scales; *b*, oblique section of an enlarged papilla in the greatly thickened rete mucosum; *c*, enormously enlarged papilla with cell exudation separating its fibers; *d*, dense round cell exudation in masses round the vessels; *e*, similar cell exudation round a vessel of the deep plexus. There is also a scanty cell effusion all through the corium.

greatly elongated, and sometimes interlaced, forming lacunæ filled with leukocytes.

The papillæ were correspondingly enlarged, both vertically and laterally, to from four to five times the size of the normal; they were filled with exudation cells, which extended to the horizontal vessels of the superficial plexus, in diminishing numbers, but very few leukocytes extended into the rete. The capillaries were greatly dilated, but there was not much infiltration of their walls. The deep layers of the corium were only slightly involved, there being only here and there slight effusion round the vessels. When the sweat ducts passed through the infiltration, there was proliferation of their cells and blocking of the lumen, but the

deeper parts were not always affected, though in some sweat coils there was cell infiltration between and proliferation within the coils. The hair follicles and their appendages escaped altogether, or with trifling cell infiltration round them. Clearly this is a different condition to what Neumann calls papulæ syphiliticæ orbiculares, in which he describes the hair follicles and their belongings as the center and acme of the process.

Large Papular Syphilid (Plate II., Fig. 7). *Synonym.*—Lenticular syphilid. This is one of the common early eruptions often following closely upon or mixed up with the erythematous lesion. It may, however, be one of the relapsing manifestations at a late period. The papules may be widely spread and numerous, but not closely packed; or they may be few and localized, but do not often group, except round the mouth or genitals. The most common positions are on the forehead, lower part of the face, nape, and trunk, especially the back, the flexor aspect of the limbs, and about the genito-anal passages of both sexes. The lesions are from an eighth to half an inch in diameter, distinctly raised, sharply defined, flatly convex, varying much in color, and, as a rule, of a deep red or raw-ham tint, but sometimes pale, and at other times a purplish-red, firm and smooth to the touch, though after a time they may desquamate. The larger ones are nodules rather than papules. These may be combined with the large follicular syphilid in a way to be presently described.

The *diagnosis* is easy, both from the fact that other syphilids and symptoms are likely to be present, and because the large papules are practically diagnostic, being simulated only by the nodules of leprosy, in which the history of residence in a leprous district and the general symptoms of that disease would be decisive, but when the two diseases are associated, the diagnosis may be no easy matter, unless, as in one instance that came under my notice, anesthesia were present, which is not always the case in tuberculated leprosy. A careful analysis of the history would be necessary in such cases.

Anatomy.—In the large papule (Fig. 50), the cell infiltration affects the whole of the corium, commencing round the vessels of the superficial and deep plexuses, and their various ramifications. The cell effusion is usually greater in the papillary layer and the parts subjacent, so that here the structure of the corium is completely replaced or obscured by it, and the vessels appear in places as if they were mere channels in the cell effusion; in other parts they are only indicated by the position and

arrangement of the cell masses; this is very noticeable in the vessels of the hair follicles and sweat ducts. There is, however, but little cell infiltration of the hair follicle itself, and its outline is not altered as a rule, but the fibers of the arrector pili muscles are often separated by leukocytes. Both in the sweat ducts and coils the lumen was often blocked by proliferation of the lining cells, and sometimes the structure was destroyed. There was always more or less cell infiltration between the coils, in places quite obscuring the gland structure; the rete was stretched and thinned in some places, slightly thickened in others, and occasionally there was downgrowth of the interpapillary processes. The outline of the palisade layer was generally well defined, and there was but little leukocytic infiltration, while there was occasionally slight loosening of the upper part of the horny layer, which was otherwise unaffected.

Follicular Syphilids. There is a large and small form of this variety of papular syphilid, in which the hair follicle is the seat of the lesion, constituting the so-called "syphilitic lichen or

FIG. 50.—Lenticular syphilid. 2-in. obj., 2-in. ocul.

a, normal epidermis; *b*, dense cell masses round the blood-vessels in the deep part of the corium, and uniformly diffused through the papillary layer.

miliary syphilid." The **larger** is not a very common eruption (Plate II., Fig. 4), but much more so than the small form. It generally occurs in the first six months of disease, and its most distinctive feature is its occurrence in irregular groups of three or four up to twenty or more. The most common positions are the extensor aspect of the limbs and the back, but it is not unusual to find it on the neck and breast, and it may be widely spread. The papules are about the size of a large pin's head

or millet seed, bright red at first, but soon changing to brownish-red, and becoming crowned with a small scale, which is sometimes the remains of a minute vesicle. When they involute, they become flattened, and even depressed below the surface, leaving a pigmented pit. The eruption comes out in crops, so that all stages may be present simultaneously; occasionally the in-

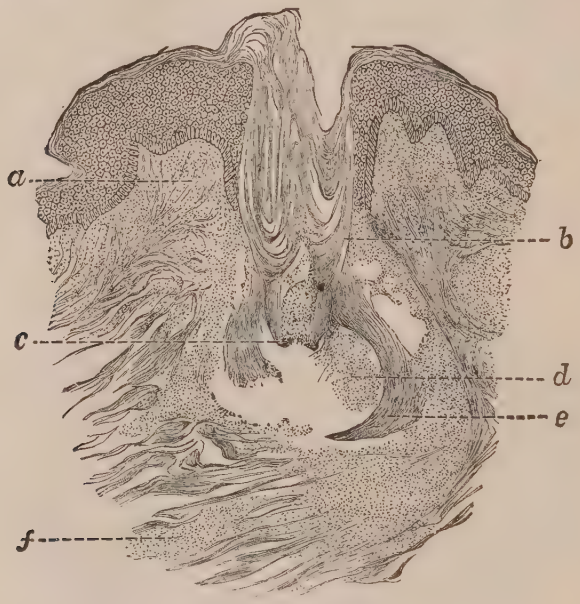


Fig. 51.—Larger follicular syphilid. × 125.

a, cell effusion in the angle of the hair follicle; *b*, dilated hair sac nearly filled with horny scales; *c*, hair papilla destroyed by the inflammation; *d*, inflammatory effusion separating hair sac from the hair itself; *e*, portion of dilated hair sac; *f*, masses of cell effusion below the hair follicle.

flammation is intense enough to form vesicles or even pustules on the apex of some or all of the papules. Groups of brownish-red papules on the limbs and trunk, leaving pigmented and often atrophic pits, are very distinctive, and should always suggest further inquiry for the evidence of syphilis, which is invariably forthcoming at this stage.

Anatomy.—The examination of the papules in the **larger follicular** syphilid (Fig. 51) showed that the whole process was in and around the hair follicle, but, unlike the non-specific lichen, the inflammation affected the hair papilla itself, whereas in all other lichens, the inflammation is

limited to the angles of the follicles and rete, and immediately round the external sheath, and any changes in the follicle, such as the knoblike outgrowths described by Neumann in lichen ruber, pityriasis, etc., were secondary and only occurred in cases of long standing. There was slight disturbance in the horny layers adjacent to the hair follicle, and the rete was thickened and raised up by the effusion beneath, so as to form a papule round the hair. Three or four papillæ adjacent to the follicle were broadened and slightly deepened by rete downgrowth, and there was dense cell infiltration, not only into the papillæ, but into all the tissue round the follicle for its whole depth; this cell infiltration did not, however, extend far from the follicle in a horizontal direction, but its boundaries were not abruptly defined. Vertically, it went down directly below the follicle, but either did not extend to the fat, or did so only by the narrow columnæ that Warren has described. Where the cell infiltration was greatest, the structure of the corium was quite obliterated, the vessels of the papillæ were dilated, and their walls studded with nuclei, the position of the larger vessels being only indicated by a well-defined mass of densely crowded cells which entirely concealed the vessel wall, and evidently both filled and surrounded the lumen. Coming to the follicle itself, the lower part of the external root-sheath below the hair shaft was dilated into a circular sac, which was ruptured at the lowest part, where the pressure was greatest; it had evidently been filled with cells, though in the section drawn it may be seen that many have fallen out in its preparation (Fig. 51). The internal root sheath was also ruptured by similar distention, and the papillæ were densely infiltrated with leukocytes, which had partially separated the shaft from the inner sheath; in some hair follicles there was inflammation round them, but the hair papilla was untouched. The sebaceous glands were similarly involved in the process, their elements being either separated or else only a fragment of the gland left, but the arrector pili muscle was not involved at this stage. In the sweat glands, which were near the affected hair follicle, there was cell infiltration between the coils and epithelial proliferation within them, but those further off were normal.

In a papule undergoing involution, which was removed from the flexor surface of the forearm of a woman, æt. thirty-two, in whom the eruption had commenced three months previously, preceded for about three weeks by the usual premonitory symptoms, the papule was not formed about the hair follicle, but by the lifting up of the epidermis by dense cell effusion, in the center of which a sweat duct could sometimes be traced. The effusion obscured or destroyed the corium structure where the effusion was greatest, only fragments of it and its vessels being discernible. The mass of it was pretty sharply defined below, where it was bounded by the upper wall of the vessels of the superficial plexus. The rest of the corium was normal except in the immediate neighborhood of the vessels, whose position was marked by a defined oval or round mass of leukocytes, but the vessel walls were invisible. In the epidermis the most superficial part of the horny layers had desquamated, and the rete cells, especially the lowest, were elongated and

narrowed, giving a feathery appearance to the lower border, and some of the interpapillary processes were enlarged. Unstained sections showed that there was marked pigment deposit in the lowest cell layers. Similar conditions existed on each side of the papule, but where the process was not so advanced there was dense infiltration in the papillary layer only, and below that it was only round the vessels, forming sharply defined branched cell masses, with the bundles of the corium

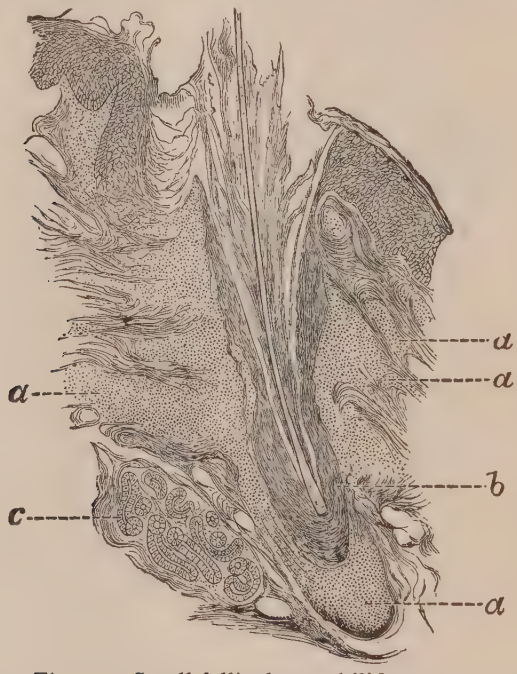


Fig. 52.—Small follicular syphilid. × 125.

a, *a*, masses of round cell effusion completely inclosing the hair follicle; *b*, hair follicle unaffected; *c*, sweat coil with cell exudation between the acini.

almost natural except from compression, filling up the intervals between them. The hair follicles were very small, most of them cut transversely, and there was cell infiltration round the follicles and between the fibers of the arrector pili, but no change in the follicle itself. Wherever there were sweat ducts, there was cell effusion round them, dense above, and blocking the lumen, but diminishing lower down and almost ceasing about midway down the corium; in some of the sweat coils there was cell infiltration between the acini and cell proliferation within them, while others were quite healthy.

The above observations go to show that the papule may be formed round a hair follicle or sweat duct, according to the anatomy of the part attacked.

The "**small follicular syphilid**" (Plate I., Fig. 5) is a rare manifestation of syphilis in my experience, and is more common in women; indeed, nearly all my cases were females. It may occur in the first or second year of disease, and, as far as the individual papules and their grouping are concerned, exactly resembles lichen scrofulosus, consisting of convex papules the size of a large or small pin's head, pink at first, but soon becoming fawn color, or even the same as the normal skin. They are generally thickly crowded together in groups, which may be irregular, roundish, or even in rings, often quite general in their distribution. This eruption is very persistent unless perseveringly treated, and the papules, on involution, leave minute fawn-colored stains behind. Like its prototype, lichen scrofulosus, each papule may be the seat of a central horny spine just as in lichen spinulosus.

Diagnosis.—It has to be distinguished from *lichen scrofulosus;* the characters of the rash are identical in both, but while lichen scrofulosus is rare after puberty, and never later than thirty, the syphilid may occur at any age. Lichen scrofulosus is seldom seen on the limbs, and never on the head, while the syphilid is likely to be present in both these positions. The two conditions, the presence of this rash in a person over twenty,* and its being on the limbs or head, should excite suspicion, and further inquiry will nearly always furnish evidence of past or present syphilitic lesions.

The miliary papulo-vesicular, the miliary papulo-pustular, and the acneiform syphilids may be regarded as merely developments of the miliary papular syphilid, the inflammatory effusion being sufficient to produce vesicles or pustules on the papular foundation.

In the small **follicular syphilid** (Fig. 52) there was a dense cell infiltration completely surrounding and permeating the follicular wall, but not affecting the root sheaths or breaking up the structure of the follicle. The cell infiltration was greater at the bottom than at the angles of the follicle: it was very marked round the adjacent vessels, but existed in only a slight degree between the coils of a neighboring sweat gland.

The horny cells round the hair shaft were increased in number, so that in the section, they imparted to the hair the appearance of a quill pen.

* I saw once a well-marked example in a girl of twelve, with accidentally acquired syphilis. The disease had been present about two months, the eruption three weeks. There was no difficulty in diagnosis, as the other symptoms of syphilis were well-marked.

Corymbose Syphilid * (Plate II., Fig. 8). This is a rare form in which a large lenticular papule is in the center of an irregular group of the large follicular papules, the compound group being an inch or more in diameter. This eruption may extend all over the trunk, or be sparsely scattered about, but I have never seen it on the limbs or face. As a whole it forms a striking and unmistakable picture. The term is also loosely applied by some authors to other grouped syphilids. Whitfield suggests that this peculiar pattern of the eruption is because "there has been sufficiently strong development in the original papules to enable local metastasis to take place around them, such as is not unfrequently seen around malignant tumors."

The **Vesicular and Pustular Syphilids.** Although these tend to run on from one to the other, and are often present simultaneously, they can be more clearly described by considering them separately. They vary much in their size and grouping, and so present some similarities to eczema, herpes, varicella or variola (early stage), and pemphigus, in the vesicular forms; and acne, variola (late stage), and impetigo or ecthyma, in the pustular forms. It must not, however, be inferred that they are really those diseases modified by syphilis, and qualifying terms founded on these resemblances are better avoided.

The foundation of nearly all these eruptions is a papule of the character already described, with the addition sometimes of a red areola. Upon this papule the vesicle or small pustule (Plate I., Fig. 6) develops; in some, the vesicle passes into a pustule, while in others the pus is present from first to last. Each lesion is of short duration, a few days as a rule, and then ruptures or dries up into a scale or crust; the scale soon falls off, and leaves the flat, deep red papule, and this dies down, and a pigmented spot is left. The crust, which ensues on the pustule, takes longer to separate, ulceration often goes on beneath it, and ultimately a pigmented depression or scar is left. The eruption generally comes in crops, and so as a whole may last for weeks or months.

* The figure in Plate II. is drawn from a case of Dr. Whitfield's, which he published in *Brit. Jour. Derm.*, vol. xiii. (1901), p. 283, with histology. The cell infiltration was chiefly round the hair follicles, but involving the sweat glands also. There is a good model of a marked case in the Museum of the Roy. Coll. Surgeons, No. 185, Dermatological Series.

Vesicular Syphilids are much less common than pustular, are all early eruptions, and are all very rare after the first six months of the disease. They run a slower course, leave stains, and are almost invariably associated with other symptoms or eruptions of syphilis.

The **Small Vesicular Eczematous Syphilid** of Bassereau and Hardy, who first described it, is very rare. It comes out in crops, of small, flat, slightly raised vesicles, each seated on a papule surrounded by a brownish-red surface, if they are grouped, or with an areola round each, if scattered. They do not enlarge much nor do they burst and weep like true eczema, but after four or five weeks dry up; and the red areola having faded, only the deep red, flat papule is left, and this slowly dies down into a dirty brown stain. In exceptional cases the vesicles become pustules, which dry into thick scabs, and conceal superficial ulcers. Their slow progress, their trifling degree of itching and burning compared with eczema, the absence of discharge, and the subsequent pigment, apart even from other signs of syphilis, mark differences much greater than the resemblances to eczema.

The **Large Vesicular Syphilids** are grouped or herpetiform, and if general, varicelliform, or varioliform. In the grouped large vesicular, or **herpetiform syphilid**, the groups may be irregular, circinate, or serpiginous by coalescence; in all, the vesicles are on a deep red base, which subsequently gets brownish. After lasting about a week the vesicles rupture or dry up, leaving fine scales over the brownish raised base, the latter being rather persistent, but ultimately leaving only a stain, or, if the vesicle gets converted into a pustule, a thick yellow crust forms over it, with perhaps superficial ulceration beneath. The eruption may come on the face, limbs, or trunk, and is usually only in a few patches; it differs from *true herpes* by the groups being symmetrical, slow in development and course, by the vesicles being seated on a raw-ham-colored base, perhaps also by the crusts and ulceration, by the subsequent stains, and by the presence of other symptoms of syphilis. Hutchinson also has described an eruption indistinguishable from herpes zoster, except that it is symmetrically distributed, that it is seldom limited to the chest, and that it is more persistent than the non-specific

form. I have seen similar cases, one a young man who had a patch under each scapula late in the disease. Herpetiform grouping of tertiary lesions is occasionally seen.

In the **varicelliform syphilid,** the vesicles are either convex or umbilicated, and the contents soon become cloudy; they are situated on a slightly raised plateau, of the usual dull red color, and after a few days the vesicles dry into thick adherent crusts of a greenish-black color; when they fall off the brownish base is left, but it, too, soon gives place to a stained depression.

Its occurrence in an adult, its slow course, the vesicles being seated on papules, more closely grouped, with more crusting and even ulceration, slower development and greater persistence, to say nothing of the presence of other symptoms of syphilis, distinguished it from *varicella.*

The **varioliform syphilid** is only a slight modification of the varicelliform. The resemblance to *variola* may, however, be so great that the greatest care is necessary in order to avoid error.

Liveing * relates a good case of this kind, which had been refused admission at several hospitals on the supposition of its being smallpox.

The absence of the characteristic premonitory symptoms of smallpox, the comparatively trifling rise of temperature in the syphilid, its slow development and course, and perhaps other evidence of syphilis, are the chief points to attend to.

Anatomy.—The anatomy of the vesicular syphilids has been investigated by Cornil and others. As far as the base is concerned, the changes are of the same character as in the papular forms. The fluid is chiefly effused above the rete in the granular and corneous layers, and is contained partly in the cells themselves, partly in the cavities of the ruptured cells; the rete cells are also excavated, but to a less degree, unless the vesicle is large or becomes a pustule; then the whole rete, and even the papillary part of the corium, are also involved and filled with pus cells.

There are two forms of bullous syphilid: "rupia" and "pemphigoid." They differ from the other vesicular and pustular syphilids in not being placed on a raised red base, and the areola is often pink and not the usual raw-ham color.

Rupia (Plate I., Fig. 9) is one of the most characteristic syphilids; as the term is not now used for non-specific lesions it

* Fifth edition, p. 346.

requires no prefix. Its most common period is in the second and third year of the disease or later, but it may also be a quite early eruption, as in a case I observed, in which it followed closely on a phagedenic chancre. It is always associated with profound cachexia, often, if in the secondary period, with a severe primary lesion, especially the phagedenic chancre, and it is much less common than it used to be, since improved diagnosis and treatment have made the severe forms of syphilis comparatively rare. Its outbreak, especially if in the secondary period, is usually preceded or accompanied by a rise of temperature, and periostitis is common.

It begins with the formation of a bulla, a quarter to one inch in diameter, the contents of which are clear or blood-stained, but soon become purulent; then an areola forms, the covering of the bulla gives way and allows the contents to escape slowly, and this dries into a crust, under which ulceration takes place and extends peripherally. The pus drying, the crust gets thicker, and as the ulcer extends, broader also at the base; and thus the characteristic stratified, conical, limpet-shell crust is formed, with a pink areola round it. When the crust is removed a sharply punched-out ulcer, shelving towards the center, is revealed, or the ulcer may be visible beyond the crust, and the latter may fall off before it has time to acquire the limpet structure. These lesions are, as a rule, few in number, but are sometimes numerous, situated in any part of the body surface, but are usually most abundant on the limbs, and may be either scattered or grouped, sometimes in rings. The ulcers continue to spread, sometimes serpiginously, unless the patient is under judicious treatment; they heal slowly, leaving white scars, sometimes with a ring of pigment round them. The eruption may last for months by the formation of new crops of bullæ, is apt to recur after apparent cure, and is only seen in the acquired disease.

No difficulty can arise in *diagnosis*, unless the lesions are few and occur in the late tertiary period, when they may be mistaken for scrofulous ulceration; but this is not common in adults, and evidence of past lesions, either syphilitic or scrofulous, as the case may be, is rarely wanting. The scars of syphilis are round, more superficial, non-adherent, thin, and pliable; those of scrofula, are generally irregular, adherent, and

seamed. The position of the lesions is often quite different, and may assist, with the other signs, in making the distinction.

The **Pemphigoid Syphilid,*** or so-called syphilitic pemphigus, unlike rupia, is a rare eruption in acquired, occurring almost exclusively in congenital syphilis, and its existence is scarcely admitted by some authors. I have met with one case in a married woman, æt. nineteen, but unfortunately no particulars have been preserved. It is generally almost limited to the palms and soles, but it may be widely spread; the contents seldom remain clear long. Its position, association with syphilitic symptoms, and amenability to mercury, are its distinctive characters. It is one of the manifestations of a severe form of syphilis.

Pustular syphilids are not uncommon at all stages of the disease, but occurring in the early stage are, if at all extensive, indicative of grave cachexia.

The small pustular or **acneiform** syphilid is one of the early and rarer forms; its favorite positions are the face and shoulders, but it may come anywhere except the palms and soles, as in the following well-marked case, in which the eruption was general. Annie S., æt. twenty, admitted into U. C. H. September, 1886. The appearance of the rash was exactly like the case represented in Bateman's "Delineations of Cutaneous Diseases," 1828, Plate XLIV., Fig. 1, under the name of ecthyma cachecticum. The pustules were flat, about one-eighth of an inch in diameter, on a raw-ham-red, raised base, which was broader than the pustule, and this again was surrounded by a narrow areola; these soon dried into a scab in the center, forming a three-ringed lesion, with central dark scab. The whole of the contents of the pustule soon dried into a crust, which fell off and left the raised, deep-red-tinted base, and this was succeeded by a dirty-brown stain. These pustules were partly scattered, partly in irregular groups. Most of the eruption came out rather quickly, and then spread more slowly, affecting the whole body surface—the face last—except the palms and soles,

*Hutchinson's Smaller Atlas, Plate XCVII., severe case; Zeissl's case was a typical instance; also Hardy's, *Lancet*, Paris correspondence, 1870, p. 65, man, æt. thirty-eight; Tilbury Fox's, *Lancet*, 1874, vol. ii. p. 43, man, æt. twenty-five; Gajasy, *Berl. klin. Woch.*, No. 24, 1880; abs. *Ann. de Derm. et de Syph.*, vol. for 1881, p. 771—the eruption was general and recurrent.

which were free, with the exception of two or three red, slightly raised spots on the left sole. The patient improved rapidly under mercury and was almost well in a month. Some of the papules of the larger lichenoid syphilid are frequently capped with a small pustule, and probably the above eruption is only a further development of this condition.

Diagnosis.—Its resemblance to true *acne vulgaris* is not very great. The positions, the drying up of the pus into a scab, the characteristic red base, the absence of comedones, the duration of the eruption, the evident ill-health, and the other symptoms of syphilis, suffice to distinguish it. Horand * describes a tertiary eruption limited to the nose, which closely resembles acne. It is rare, occurring three times in a thousand cases of syphilis.

Small pustules, single or aggregated, are not infrequent in the scalp, while erythematous or other syphilids are present on the body. They are soon covered by yellowish-gray or brown crusts, forming patches round a single hair group, and are called by some "impetiginous syphilids" or **"syphilitic impetigo."** They are sometimes seen on the forehead and face, and, like the others, are formed on a papule, though this is not apparent in a patch, and ulceration occurs beneath the scab and leaves a pigmented cicatrix.

The large pustular syphilids are seen only in the cachectic. The so-called **"ecthymatous syphilid"** may be superficial or deep, the superficial occurring mainly in the early stage, the deep in the third period. The lesion commences round a hair follicle, forming a pustule about a third or quarter of an inch in diameter, drying into a greenish scab, on a raised red base, surrounded by the usual coppery areola, develops slowly, lasts for a few weeks, but fresh crops often keep up the process for months. It is most common on the lower limbs, but is not confined to them. Their slow development, coppery areola and base, the cachexia that accompanies, and the pigment scars that follow, are the diagnostic features. Like rupia, when it appears early, it is often preceded by a severe form of primary lesion.†

Frambesioid Syphilid.—This is a rare form of ulcerating lesion and may occur quite early, as in the following case. A

* Horand, "Syphilide acnéique de nez," *Ann. de Derm. et de Syph.*, vol. vi. (1885), p. 385.

† There is a good portrait of the eruption in Duhring's Atlas, Plate D.

man, æt. thirty-two, had a sore three months previously, followed by no other rash but the following, which was confined to the face. On the chin were two shilling-sized lesions, partially coalescing, projecting abruptly about a quarter of an inch above the surface with a rolled edge. The surface was granular and fungating, and partially covered with a dried purulent crust. There were similar lesions on other parts of the face, but no other syphilids in any other part of the body.

Nodular or Tubercular Syphilids are convex projections of the skin, too large to be called papules. They are most common in the tertiary period, but may also be an early manifestation accompanying or following closely upon the erythema. When occurring in the first year they are from a quarter to half an inch in diameter, sharply defined, considerably raised, of the characteristic coppery color, sometimes slightly scaly, occasionally breaking down and ulcerating, with thick scabs and much inflammation round, accompanied with much pain, and followed by white, depressed scars. They are solitary or few on the face, limbs, and trunk, but are not grouped, and some other eruption is often present. In the late secondary and tertiary form, although perhaps solitary at the commencement, others soon form round it. They are usually closely aggregated in one or two situations, very often on the forehead and other parts of the face, but in some cases cover a considerable part of the face bilaterally (Plate I., Fig. 10) often more closely aggregated on the nose and neighboring parts, the lesions varying in size from a hemp seed to a large pea or bean. The diffuse is less likely to ulcerate than the circumscribed variety; the latter may coalesce into an infiltration, though the component nodules are generally discernible, at least on the edge, and is then very liable to break down and ulcerate, especially when near the mouth, or on the nose, either where it joins the cheek or on the ala. On the limbs and trunk large tracts are sometimes involved, but never symmetrically. By peripheral evolution of the new nodules, and central involution, with or without ulceration, of the older ones, a cicatrix, more or less pigmented, results, either from atrophy or ulcerative destruction. These scars, with their nodular border, are very characteristic.

These infiltrations, which are generally gummata, are

called by some writers "**syphilitic lupus.**" They ulcerate serpiginously, and when they occur about the face, especially the nose, may closely simulate lupus vulgaris; indeed, Leloir claims to have proved that scrofulo-tuberculosis and syphilis may be combined in the same lesion, but this has not yet been accepted. The ulcer of gummatous syphilis is covered with a thick greenish-brown crust, has a sharply punched-out margin and a circinate or reniform outline, which is very suggestive of its nature and may produce considerable disfigurement if on the nose, though it is seldom deep in other parts. The scar is usually flexible, white, and shining.

Diagnosis.—From lupus vulgaris the later nodular syphilid may be distinguished by the following considerations: The age of the patient—lupus vulgaris nearly always commences in childhood, a period in which this form of syphilis would be rare; by the nodules—those of syphilis are solitary at first, followed by smaller ones round each, and distinctly raised and copper-colored—those of lupus are multiple from the first, embedded in the skin, brownish, translucent, and "apple-jelly-like"; by the duration—the syphilid would rarely be more than a year or two in duration, and syphilis would do more damage in a few months than lupus in as many years; besides, in most cases, these would be some evidence of past syphilis. Nevertheless, occasionally when all such evidence is wanting, as may be the case in women, although there will be generally a presumption in favor of syphilis, the evidence may be short of being conclusive; then a week or two's treatment with iodids will produce such decided improvement in the syphilid as to remove all doubt.

The Justus blood test is not reliable as an absolute test, as it may occur in other conditions, but it is a good confirmatory test.

Subcutaneous Nodules or Gummata are, like the superficial lesions, common in the tertiary period, but are occasionally secondary. A firm, painless, well-defined, pea-sized nodule can be felt deeply embedded in the skin. This enlarges both laterally and vertically, and as it approaches the surface, the skin which had been normal becomes of a purplish-red and adherent to the tumor, which softens in the center, ruptures, and discharges a puriform fluid, and leaves the cavity to either extend or fill up, according to the patient's health or to the treatment; but, under

favorable conditions, such a tumor may be absorbed before reaching the skin and disappear without leaving a trace. These gummata occur chiefly about the limbs, especially round the patella, and to a less extent round the elbow. So much is this the case that scars round the patella, not due to injuries, are practically diagnostic of syphilis. Before they reach the surface they may be distinguished from fatty tumors by their more rapid development, firmer consistence, and absence of lobulation. When they have suppurated, they differ from malignant tumors in their abscess-like cavity, the absence of fungation, bleeding, secondary enlargement of neighboring glands, and the smaller area of ulceration. Their structure is exactly like gummata in the liver or elsewhere.

Lesions of the Mucous Membranes. Syphilis affects the mucous membranes in much the same way as the skin, but the appearances are necessarily modified by the different physical conditions of the parts; consequently such lesions are called mucous tubercles, mucous patches, condylomata, etc. These lesions are not absolutely confined to the mucous membranes, as they also occur in those parts of the skin where the same conditions of warmth and moisture obtain, such as the axillæ, under the breasts, at the navel, between the toes, behind the ear, or under the chin in fat persons; but the more usual positions are, inside the lips near the angle of the mouth, the buccal mucous membranes, the fauces, the tongue, and at all parts where the mucous membranes join the skin, such as the vulva, the anus and perineum, the scrotum, the angle of the mouth, and the nostrils. The lesions are primarily of any size up to half an inch or so, roundish, but, when close together, may coalesce into large patches. The patches are slightly raised, flat, with sloping margins, and, like the skin lesions, are bright red at first, and then brownish-red, but do not leave pigmentation behind them. The epidermis over these elevations soon peels off; a thick pus is exuded, which is often offensive and highly contagious, reproducing similar lesions wherever it touches. This is often seen on the buttocks and vulva, where they reach their highest development, and appear to be broken up into segments, constituting condylomata. The infiltration prevents the free mobility of parts like the mouth and anus, and

painful fissures or rhagades are formed, which leave the characteristic radiating, white scar lines, so often seen round the angles of the mouth. They can scarcely be mistaken for anything else; true warts in the same situations have more epidermic covering and are pedunculated. Moreover, mucous tubercles would be sure to be accompanied by other signs of syphilis, since they generally occur in the first six months, though solitary lesions may occasionally be seen in the tertiary period.

The fauces, pharynx, and soft palate may also be affected with an analogous condition. Diffuse redness and slight or marked swelling, in the case of the uvula, are visible, and there is some discomfort in swallowing and slight dryness of the throat, or occasionally severe pain. As a rule, all this disappears in a few days, under treatment.

Besides the erythema and mucous tubercles, shallow ulcers and excoriations are common on the buccal mucous membranes. The edges are sharply cut, but uneven, with some redness round them, and the surface is grayish-white from exudation, though the actual edge is white from sodden epithelium. They are seen on the pillars of the fauces, on the tonsils, the buccal mucous membrane, and outside the lips. On the tonsil deep ulcers and even sloughing may occur occasionally.

Tertiary lesions affect chiefly the gums, hard and soft palate, and tongue. On the gums serpiginous ulceration, beginning behind the incisors and slowly extending, may be seen four or five years after infection and occasionally earlier. Similar eroding ulceration may affect the hard palate, exposing and leading to the necrosis of the bone. The appearances presented by the tongue lesions are very variable, from mere white patches (scars) to deep infiltrating and ulcerating lesions. Lewin says there are twenty varieties.

Syphilitic Ulceration. Although ulceration is the outcome of one or other of the previously described lesions, a separate description may be of practical utility. Following Kaposi, they are of four kinds: (1) from a nodule in the skin—superficial, round, reniform, or serpiginous; (2) rupial—round, reniform, or serpiginous, with thick crusts; (3) from a cutaneous gumma—irregular, deep, and crater-like; (4) from subcutaneous gumma—irregular and deep.

The typical ulcer is formed from a single nodule; it is painful and tender, circular, well-defined, finely indented at the edge, and undermined. The margin and floor are covered with a grayish-yellow layer from disintegration and infiltration, which is circular at first, but after a time this is limited to one portion, amounting to about two-thirds of the circle, and the characteristic reniform shape is produced. The concave part cicatrizes, while fresh infiltration extends beyond the convex border of the ulcer; the confluence of several ulcers produces serpiginous outlines both in those from nodules and from rupia. The ulcers arising from gummata are relatively deeper and of smaller size, with irregular, crater-like walls, spreading only at the orifice of the cavity. All syphilitic ulcers become covered with thick, greenish-yellow crusts, which always require removal for diagnosis and treatment.

Phagedena * is a severe complication, which may attack the primary, secondary, and tertiary lesions.

The Phagedenic chancre is often, as Bumstead and Taylor pointed out, the precursor of rupial, or phagedenic secondary lesions; but the latter may follow a sore of very simple characters, and while sometimes all the lesions become phagedenic, on the other hand, it may only affect some of the lesions.

It may be serpiginous or sloughing; in the first, while spreading at one point, healthy granulations may form at the original position. The sloughing form resembles hospital gangrene, and spreads rapidly and deeply, and is attended with severe pain and fever.

Although the soil is the chief etiological factor, and often there is cachexia from delay in specific treatment, alcoholism, and other excesses, or bad hygiene, pregnancy, senility, or other cause of diminished resistance, there is doubtless a special organism introduced into the tissues in addition to the syphilitic virus.

Pigmentary Change in Syphilis may result from (1) increase, (2) decrease, of the normal pigment.

(1) Increased pigmentation may arise:

(*a*) From the previous eruption;

* A good abs. of Fournier on Tertiary Phagedena in *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xix. (1901), p. 150.

(*b*) Independently of any eruption, that is to say the so-called pigmentary syphilid.

(2) Loss of pigment occurs on the site of previous syphilitic lesions:

(*a*) In the form of white spots on the site of previous macular or papular syphilids (leukodermia syphilitica);

(*b*) From destruction of tissue, as in the scars of ulcerative and some pustular syphilids, but there is often marked and persistent pigmentation of or round such scars, at all events at first.

Virchow's theory of pigmentation is the one generally accepted, viz., that it is due to blood-coloring matter, which permeates the tissues, and is deposited partly outside the cells as hematoidin crystals, and partly within the cells as pigment granules. Neumann * says that the pigment in syphilis is found both in the exudation and connective-tissue cells, and free in the necrotic tissue of the rete, and also in thin, threadlike tubes (processes of cells) which carry the pigment. When the pigment is only in the exudation cells and rete, it may disappear sooner or later, by absorption or desquamation, as occurs after macular, papular, and some pustular syphilids.

When it is inclosed in the connective-tissue cells, which may, in some cases, be completely filled except the nucleus, the pigmentation persists for a very long time and may be permanent. This is seen on the borders of scars following syphilitic ulceration and many pustular lesions, after cutaneous gummata, and some grouped papules; the pigment is here granular. Neumann is convinced that the white spots following papules and maculæ are produced by the epidermis being cast off, and the newly formed epidermis not taking up any pigment. Pigmented cells, however, remain from eight to eighteen months in the papillary layer, partly between the connective-tissue cells, partly round the blood and lymph vessels. Riehl confirms this.

Frattali, from histological examination of the pigmentary syphilid, concludes that the pigmentary syphilid is consecutive to a pericapillary infiltration of the most superficial layers of the derma.

Hjelmann, in addition, finds a considerable increase of pig-

* *Loc. cit.*, p. 223, *et seq.*, in which the whole subject is discussed.

ment in the derma. The leukodermia he ascribes to the obliteration and atrophy of the vessels.

Ehrmann says that the production or absence of pigment depends on the presence or absence of melanoblasts.

Pigmentary Syphilid * (Plate II., Fig. 11). *Synonym.*—Syphilitic leukodermia. This was first described by Hardy in 1853. The most common period for its development is from the sixth to the twelfth month of disease, but it may also come quite early, or in the second or third year. In a case of mine, a young married woman, it appeared about the third month, and was limited to the neck, and accompanied by the erythematous syphilid, which she averred had not preceded the pigmentation; and in a case of acquired disease, in a girl of nine years, it occurred in the sixth month. It is rather a rare condition, but is seen much more frequently in women than in men, in brunettes more than in fair women, and seldom after the age of thirty-five, but Chambard records a case in a man, æt. seventy-one. Gémy records a case in a boy from hereditary syphilis. Its seat is chiefly on the neck, especially at the sides and back; and it may occasionally be seen on the face, chiefly on the forehead, the chest, or flanks, but rarely on the limbs. The lesions are irregularly margined, round or oval spots, from an eighth to one inch in diameter, well or ill-defined, with a yellowish-brown color, but the surface is otherwise unaltered; they may be obvious, or require looking for, discrete or confluent, and the skin in the intervals between them appears abnormally white, though whether it really is so is a disputed point. It may be the only symptom of syphilis, but is more frequently only one of many. Most German authors † regard it as simply a leukodermia of syphilitic origin on the site of a previous roseola; but Taylor of New York, while admitting that there is a syphilitic leukodermia,

* *Literature.*—Hardy, "Maladies de la peau" (Paris, 1858), p. 154. Taylor, *Amer. Jour. Cut. and Ven. Dis.*, vol. iii. p. 97,—a good article with chromo-lithograph; and at p. 218 same volume is an abstract of Maireau's "Thèse de Paris." Fournier, "Leçons sur la Syphilis," also gives chromo-lithograph. Santin also has written an inaugural thesis upon it.

† Poelchen, "Vitiligo acquisita Syphilitica," Virchow's *Archiv*, Bd. cvii., p. 535, with plates, says nearly all women's necks are pigmented, and that the roseola spots remove a part of this when they fade.

having watched the development of a large patch from the time when it was not larger than a pin's head, considers the pigmentary syphilid to be *sui generis*, and that the leukodermia is only simulated. According to Neisser and Riehl, it is really a displacement of pigment, which is less at one part and increased all round. It lasts from two months to several years, is uninfluenced by treatment, and is sometimes permanent. Ehrmann says that it is produced only in those parts of the skin where there has been a preceding syphilid, which has involved the corium and destroyed the pigment-carrying cells, or changed them into unpigmented ones. Darkening of the skin ensues if the deeper layers are involved. If this is true the lesions are certainly not visible on the surface either before the loss or increase of the pigmentation.

Diagnosis.—It should not be mistaken for the pigmentation following the erythematous or other syphilids, while from tinea versicolor the distinction is easy; from its position, and the fact that the color is *in*, not on the skin, and that there is no fungus. From uterine chloasma the conditions under which it occurred would be the best guide.

Purpura may be seen occasionally on the lower extremities, and its relations to acquired syphilis have been discussed by Stephen Mackenzie † and others. Derville records a case where dark red spots from the size of a pea to a haricot bean appeared on the legs in the first fortnight of the disease; albuminuria was present, and intolerable itching preceded and accompanied it. In a case of Neumann's, a man, æt. fifty-one, there were discoid plaques on the forearm with ulceration in the center, similar crusted plaques on the sternum, and hemorrhagic follicular papules on the lower limbs. There were also hemorrhages in the mucous membranes. In congenital syphilis it is more common and important, as Behrend has shown. The possibility of its being produced by iodid of potassium must be borne in mind.

Late Palmar Squamous Syphilid (Plate II., Fig. 12). This is a dry scaly lesion, occurring as a reminder, perhaps, many years after infection. It is seen chiefly on those who do manual labor or in other ways have much grasping or friction of the

† *Med. Times and Gazette*, vol. i. (1879), pp. 173, 279, 501.

palm. It may occur either in the form of denudation of the horny layers in small areas bounded by a scaly collar, as in the plate, or as thickening and fissuring very like a dry palmar eczema, from which it differs in having a rounded serpiginous border. It also commences usually in the center of the palm, while eczema often begins outside the palm and affects that secondarily.

Alopecia. Loss of hair may occur in four ways. In the secondary period there may be a general thinning of the hair, as a part of the general malnutrition, occurring at the third month and onwards. This may be of various grades, from being hardly noticeable up to very extensive but irregularly distributed baldness, as in R. W. Taylor's case,* which he ascribes to the commingled seborrheic process. The hair may also come off in round patches, like alopecia areata; *e. g.*, Ethel F.,† æt. twenty-six, had symmetrical patches, an inch and a half in diameter in various parts of the scalp, a squamous eruption, and ulcerated sore throat and tongue. The hair was rapidly restored by specific treatment. In cases of more severity the alopecia may spread to one or more additional regions, such as the eyebrows (especially in women, which, according to Fournier, is characteristic), the beard, the axillæ, or the pubes. In an exaggerated but rare variety of this form there may be complete general alopecia, the patient being left without a single hair in any part of the body. These cases readily respond to mercurial treatment, as a rule, and in all the preceding forms the hair grows again within five or six months. The symmetry of the patches, the amenability to treatment, and the presence of other symptoms of syphilis, would distinguish the patchy form from alopecia areata. An incomplete, patchy loss of hair may also occur on the site of eruptions, from the inflammation involving the hair follicle; this is transitory. In the tertiary period the hair may also be lost, but in a less direct way; bald patches may be left by ulcerative or pustular lesions destroying the whole skin structure and producing scars; this is of course irremediable. General thinning, leading to extensive and often permanent

* "The Seborrheic Process and the Early Syphilitic Eruptions," *Jour. Cut. and Gen.-Ur. Dis.*, vol. viii. (1890), p. 165.

† U. C. H., O. P., No. 69, 1880.

baldness, may be consequent upon seborrhea, which is a not infrequent sequence of syphilis. The local treatment for seborrhea, combined with the general treatment for syphilis, offers the best chance of restoration. In old syphilitics the hair is also often left harsh, dry, and wiry.

Nail Affections.* These are of two classes: one, those due to lesions of the bed or matrix, or both, constituting onychia (chronic); the other due to lesions round the nail, perionychia (acute or chronic). In the first class the changes are nutritive. The nail may be brittle, chipped at the free border, discolored, pitted, and furrowed, or it may be gradually and painlessly separated from its attachment, either wholly or partially, beginning either at the free or attached border. Sometimes, while separation is going on at one end, re-attachment takes place at the other, and so the fall is avoided, but it is always left furrowed and irregular. Thickening of the nail may also occur, but it is less common than the deficiency in nutrition. The thickening occurs chiefly at the free border, where it is rough and chipped, or ridges may form, but the proximal part of the nail is often unchanged.

Perionychia may begin in three ways. 1. By the extension of a squamous lesion to the matrix; the nail over the affected area scales off, and forms white pits, while the outlying border of the skin may get thickened, brittle, and bleed easily from fissures.

2. Inflammation occurs; the skin round becomes swollen and dusky red, but does not go on to suppuration, unless the swelling pressing on the edge of the nail causes ulceration, then the tissue fungates over the nail and gives exit to a fetid discharge, and the nail itself becomes necrosed and black or otherwise discolored. Unless exposed to pressure, as in the toe-nail, it is not usually painful.

3. Gummatous infiltration of the matrix has also been recorded.

Children.—Acquired syphilis in children or infants presents much the same symptoms, and runs much the same course as

* For a more complete account of syphilitic nail affections see Fournier's "Syphilis chez la femme" (1873), p. 467.

in the adult, except that in very young children the bones, at the junction of the epiphyses to the shaft, are very likely to be the seat of inflammation. Thus, one of my cases, a child, æt. six months, infected by being suckled by a syphilitic woman, not its mother, when three months old had ophthalmia, dactylitis syphilitica of both hands, left facial paralysis, and subcutaneous gummata, some of which suppurated. In another, where the child was well up to nine months old, and then contracted syphilis from its mother, who had been infected by her sailor husband six weeks after her confinement, there was epiphysitis of the lower end of the left humerus, of the right olecranon, and of the heads of both tibiæ, when the child was a year and a half old; it had had a rash all over the body and a sore throat nine months before.

Congenital Syphilis—*i. e.*, the syphilis transmitted by the parents to the fetus in utero—presents some peculiarities both in the eruptions and other symptoms, but, at the same time, possesses many resemblances or analogies to the acquired form. Unlike phthisis, gout, etc., it is not a mere predisposition that is inherited, so that the manifestations may be in abeyance until the surroundings or habits of the patient call them out, but the disease itself is transmitted.

Its effects may be shown, by the death and premature expulsion of the fetus; by live birth with the disease in full activity, in which case the child seldom survives long; or, what is more common, it may be born comparatively healthy and several weeks elapse before the disease declares itself. Which of these several effects shall be produced—and there are various grades in each class—depends chiefly upon the length of time that has elapsed between the infection of the parents and the birth of the child, and also upon whether they have undergone effectual treatment. Whether the disease can be transmitted by the father alone, the mother remaining unaffected, need not be discussed here, more than to say that in seeking for corroborative evidence from the parents it is necessary to be aware that the mother of an undoubtedly syphilitic infant may display no evidence of the disease herself, either in her history or at the time, though such women, quite late in life, may have some tertiary lesion. With regard to the father, he can transmit the disease

to his offspring long after it has ceased to be contagious to others, and though he believes himself to be perfectly well.

The symptoms of congenital syphilis are of two classes: the early, which occur in the first two years of life, and the late, which either commence or persist after that period.

The earliest symptoms nearly always show themselves in the first three months of life, and are never later than six months,* while in the majority of cases it is within from three to eight weeks. Thus, in 249 cases collected by Roger,† in seven-eighths the disease appeared before the end of the third month, and in nearly half in the first month; in Kassowitz's 124 cases none occurred later than three months.

The symptoms that may precede, accompany, or follow the eruptions are very numerous, since any tissue or organ of the body may be affected; but the most common in the early stage are those due to inflammations of the mucous membranes of the nose, mouth, and larynx, the pericranium and epiphyseal junction of the long bones, the spleen, liver, and iris. The first symptoms are pallor, peevishness, and pyrexia, soon followed by the well-known and almost characteristic "snuffles," due to inflammatory swelling of the lining membrane of the nose. This obstructs nasal respiration, which may be stopped altogether by the accumulated secretion, and so prevent sucking, and will, if the child is not fed at once with a spoon, materially hasten the end. One or more of the eruptions and excoriations, to be presently described, soon follow or occasionally precede the coryza, most of them commencing and becoming worst upon the buttocks; mucous tubercles are seen about the mouth and anus, and rhagades round all the apertures; the child wastes; the skin gets loose and wrinkled; the complexion is of a sallow or *café au lait* tint; the face acquires a curious "old man" expression, as if the cares of this life were already too much for him; the skin is stained by the faded eruptions and disfigured by more recent ones; the hair is scanty, especially at the temples, which, with the eyebrows, are often bare; and if the larynx is affected the cry is hoarse or even toneless. The spleen is often enlarged,—in a quarter of the cases, Gee says,—and if the enlargement is great, it is often associated with profound

* Trousseau puts it at seven months, and Cullerier at a year.

† Quoted by Lancereaux, vol. ii. p. 137, "New Syd. Soc."

anemia and bone-changes; this combination is more common in the second year, when perhaps all the skin lesions have disappeared; the liver is less frequently and conspicuously enlarged. The changes in the skull are due to thickening of the bone on the one hand, or thinning on the other. The thickenings may be circumscribed or diffuse, the latter being an advanced stage of the former. The circumscribed thickenings or bossy enlargements are easily felt and often visible. They are really nodes, which are formed chiefly upon the frontal and parietal bones surrounding the anterior fontanel, but not reaching up to its edge (natiform thickening of Parrot). The parietal and frontal eminences are the last parts attacked, and, except in advanced cases, are left as islands of healthy, smooth bone surrounded by the vascular, roughened, diseased bone, which seldom reaches quite up to the sutures. These bossy enlargements are easily palpable and often visible. In the diffuse form, which affects the frontal bone chiefly, there may be osteitis as well as periostitis. Cranio-tabes, of which there are all grades, up to the total wasting of the bone substance in some spots, can be felt in the posterior part of the parietal bones, and behind the mastoid process. It is not confined to congenital syphilis, but is very common in that disease. The other form of thinning occurs on the inner surface of the skull, and is only of post-mortem interest. The thinnings and thickenings may be not infrequently seen on the same skull. Nodes may also be seen on the long bones occasionally in infancy, but are more frequent at a later age. The chief affection of the long bone is inflammation at the junction of the epiphysis and diaphysis, which is attended with heat, swelling, tenderness, and pain on movement, so as to produce a pseudo-paralysis. It may be seen at a very early age (one of my cases was only three months), affecting the ulna, radius, and tibia, but not symmetrically. The so-called "dactylitis syphilitica" is probably of the same nature as this epiphysitis. The cranial changes may also begin very early. In an infant who died at ten days old, after having had a bullous eruption with excoriations, the whole of the skull surface, except the parietal and frontal eminences, was red and roughened.

In the last stage of congenital syphilis the skin lesions are seldom of importance, and generally absent; lesions of the eye, ear, bones, teeth, and viscera, and occasionally of the nervous

system, are those chiefly met with, and since they occur independently of skin eruptions, need not be gone into here. Gummatous infiltration of the skin with ulceration, very similar to that seen in the acquired disease, is to be occasionally observed.

The various symptoms enumerated, of which only the most common have been mentioned, are, of course, not seen all together in one patient; they occur in various combinations, and at various periods, but may all be present in the first year of life, and most of them within the first three months.

The following skin eruptions are met with:

An **erythematous rash or roseola,** resembling that of acquired syphilis, is rare in infants. In Bassereau's oft-quoted case, a papular syphilitic erythema appeared on the face and then on the body on the third day of life, soon followed by coryza.

Cullerier records its appearance at birth. In a case at Shadwell, æt. two months, the rash had been present one month; the whole body surface was covered with maculæ half an inch in diameter, brownish-pink in color, with some scaliness in parts. According to Diday, the abdomen, lower part of the chest, and inner surface of the limbs are the usual positions for the bright, soon becoming coppery-red, irregularly outlined, finger-nail-sized patches, generally associated with ulcers of the mouth and anus.

Another form of erythema, however, is the most common of all the congenital syphilids, consisting of erythematous patches of various sizes, which usually commence on the buttocks and round the anus. They may be well or ill defined at the edge, bright coppery or yellowish-red, tending to coalesce into large sheets of eruption, but generally patchy on the borders. This erythema may extend uniformly on the back and inner side of the legs, quite down to the feet, including the soles, which are bright red and peeling. On the front and outer side it is still generally patchy; upwards, it often extends to the loins and abdomen, and in a few cases, all over the body, in patches which coalesce; the whole surface is then red and desquamating on the dry parts, while on the buttocks, or where it is exposed to moisture, the scales are soaked off and the surface is left raw

or brightly glistening. These generalized cases are very likely to die.

Diagnosis.—This eruption is at first liable to be mistaken for intertrigo, but this is never in well-defined patches, does not extend below the parts covered by the napkin, and yields readily to simple measures of protection and cleanliness. In specific erythema, snuffles and other syphilitic symptoms are generally present also. It must be borne in mind, however, that intertrigo is very easily excited in syphilitic children. Mothers often ascribe both these conditions to the "thrush having gone through it," and will admit this, while they will deny that a child has ever had any eruption on its buttocks or elsewhere.

This erythema differs from the exanthem of acquired disease, in the great tendency to coalesce, in being raised above the surface and often well defined, and in the greater tendency to desquamation, even at an early stage.

The next most frequent lesion is **mucous tubercles.** In the early stage they are generally associated with other lesions of the skin, but are sometimes alone with snuffles, and are often the sole relapsing lesion from the first to the third or fourth year. They are especially common, but not confined to the anus and angles of the mouth, occurring wherever there is warmth and moisture, such as the groins, axillæ, and between the toes; they resemble those seen in the adult, but are more frequent and numerous. Superficial excoriations about the anus and buttocks, generally on the site of an erythematous, squamous, or other lesion, are very common, as are also rhagades at the angles of the various apertures, such as the anus, mouth, nostrils, eye, etc., due to the inelastic and brittle condition of the epidermis of those parts, the result of erythematous and other lesions.

A **papulo-squamous** eruption, corresponding to that of acquired syphilis, is the next most common, consisting of round superficial patches, from one-eighth to half an inch in diameter, very slightly raised above the surface, delicately scaly, with a pink or reddish-brown color at first, but after a few days of a pale fawn tint. It may be limited to one or more regions, such as the limbs, forehead, or round the mouth, or occupy the

whole body surface, usually in discrete patches; it commences upon the buttocks, where superficial ulceration is apt to occur, from the irritation of the urine and feces. A variety of this is a crescentic squamous eruption with a raised border, which, in one of my cases, began on the buttocks a week after birth, then spread over the thighs, and then all over the body, forming maplike outlines on the skin, most marked over the lower part of the body and legs. A definite circinate scaly eruption, resembling that seen in the acquired form, is also to be observed.

The **small papular** forms are acuminate, convex, or flat. The first two are bright or brownish-red, of extensive or limited distribution, occurring chiefly on the limbs, sometimes in groups of three to six, sometimes scattered irregularly; they may be crowned with a scaly cap or with a small bead of pus, seldom with a clear vesicle. When the pustular element is the predominating one, it is generally an early manifestation; in one of my cases it began on the third day of life, and was associated with small squamous patches of the buttocks and thighs, while the pustular element was most marked on the face. The flat papules are not so common as the others; they are slightly raised, shining, and angular, or roundish, grouped in irregular patches, but with not much tendency to coalesce, and are very like infantile lichen planus, but their outline is often rounder, the color is duller in hue, and other evidence of syphilis can generally be found; *e. g.*, a boy, æt. two months, had snuffles badly, erythema on the buttocks, when three weeks old, still present all over the genitals, and below the knees, while on the shoulders and neck were flat angular papules like lichen planus; a few isolated flat patches, about a third of an inch square, were also present.

Vesicular eruptions are rare in congenital syphilis, and are scarcely ever the first form of eruption. They vary much in character and size, *e. g.*, a boy, æt. four months, had brown discolored desquamating patches over the legs, arms, and face, slightly on the trunk, ulcerating on the buttocks; a week later vesicles appeared singly and in groups, a millet seed in size, with little or no redness at their base; the following week they had developed into bullæ from a pea to a hazelnut in size; the

general condition was, however, improving, and in another fortnight he was well.

Pustular eruptions are much more common than the vesicular; besides the small pustules that sometimes crown papules, already described, there are ecthymatous-looking sores, with a greenish crust concealing the sharp-edged spreading ulcer, or a simple excoriation. They are never very numerous, are associated with other lesions of syphilis, are generally indicative of profound cachexia, and are often the prelude to death; sometimes they are the first skin eruptions, but not often. Superficial suppuration is very likely to occur where the parts are frequently moist, such as round the genitals, and the pus from these and other lesions may become inoculable, and so impetigo contagiosa supervenes in an unmistakably syphilitic child.

Another form is described by Barlow, of small cutaneous purplish-red abscesses which resemble boils, but have no core. F. Taylor has reported two cases, and I have had several.

Bullous eruptions of pemphigus character are more common in congenital than in acquired syphilis, while rupia is hardly ever seen; Schiff, however, has reported a case in a child, æt. eleven months. This so-called "syphilitic pemphigus" generally appears in the first week; the child is often born with it, either dead or alive. The hands and feet, especially the palms and soles, are the almost invariable localities for its onset, and it is often confined to these situations. In addition, the nail bed is frequently attacked, with consequent destruction of the nail, which often turns black; when less severely attacked it is contracted * at the proximal end, as if pinched up, and spreads out like a fan at the free end. The lower part of the face is the next most common position, while the trunk generally escapes, except in very bad cases; thus in Labat's case † the child was born with pemphigus all over, except on the palms and soles, which were red and shining; it died in twelve hours. The bullæ are either flaccid or tense, contain pus or blood, with a dusky red areola round them, or they may be on a raised, deep-red base. When they rupture or dry up, greenish-yellow or dark-green scabs are formed, which conceal an unhealthy-

* Hutchinson on Syphilis, Plate VIII., p. 416.

† *Progrès Médical*, October, 1880.

looking, spreading ulcer. The eruption is always an indication of great severity in the disease, and the child seldom lives long, either dying of general cachexia or of diarrhea, or other intercurrent affection. I have, however, seen one severe case where the eruption was present at birth recover under immediate mercurial treatment. Milder cases, where the contents of the bullæ are clear instead of purulent, have a much better chance; but when Hochsinger speaks of twenty recoveries out of twenty-three cases, this is such a large proportion, and so contrary to general experience, that he must, I think, have included cases of non-specific pemphigus neonatorum.

There is seldom any difficulty in the *diagnosis* from ordinary pemphigus; the nature of the bullæ, their position on the palms and soles, while the trunk is usually free, and the strongly developed cachexia are enough. Its occurrence in the first week of life distinguishes it from pemphigus vulgaris, but not from the form described already as occurring in the newborn in lying-in institutions, and in bad hygienic conditions, but in this last the contents of the bullæ are clear, they appear anywhere, and the children get well rapidly, if removed from their unhealthy surroundings.

Bullæ may, however, occur in connection with syphilis at a later stage, as in the case described with vesicular eruptions; for another example, the following may be related:

In a child,* sixteen days old, bullæ with clear contents, from a quarter to one inch in diameter, were present on the trunk only; there were snuffles and a depressed nose, but no rash on the buttocks. The history was that when thirteen days old a dry, scaly eruption appeared round the mouth, followed by the bullæ on the trunk; there had, however, been one on the neck when three days old; the mother had had eight abortions. The child died when a month old.

Nodular eruptions are among the late manifestations of congenital syphilis, but are not common; they present similar appearances to the late lesion in acquired syphilis, but are seldom so extensive. They were so, however, in a woman, æt. twenty-two, admitted into U. C. H., with evidence of congenital syphilis in the eyes and teeth, as well as in her skin and in her

*U. C. H., Out-patient, No. 575, 1880.

past history. The patient had suffered from nodular infiltration and ulceration for four years, and there were numerous scars about her, extensive serpiginously ulcerating patches, situated all over the right scapula, the upper third of the right arm, and the upper surface of the left breast, and numerous convex, hazel-nut-sized nodules were scattered over the upper part of the body. These gummatous infiltrations are almost the only skin lesions in late congenital syphilis, but Smirnoff records two cases of leukodermia in women, æt. twenty-three and thirty-three respectively, which he ascribed to their having had hereditary syphilis.

The *prognosis* in congenital syphilis is bad in proportion to the number, severity, and general distribution of the lesions; it is bad also when they appear at or soon after birth, or if they affect the nutrition of the child. In cases occurring later than the first month, if the nutrition is good, treatment is almost always successful, though in a few cases, after all the skin and other troubles have apparently disappeared, the child, without apparent cause, becomes marasmic and dies. Treatment should always be energetically carried out to the end, as the most desperate-looking cases are often saved.

Treatment.—In spite of the most assiduous study by a host of trained observers, almost unlimited opportunities for the trial of any method of treatment, the ready response in most instances of any lesion present to the treatment suitable for it, and finally the general acknowledgment that practically there are only two drugs that exercise a decided and unmistakable influence on the manifestations of the disease, it is strange how little agreement exists as to the details of treatment, either as regards the special preparations of the so-called specifics, the best time to commence them, how long they should be continued, the best mode of administration, when one and when the other drug should be given, whether they should be given together or apart, simultaneously or alternately. All that can be done in this work is to set forth briefly the different modes of treatment chiefly in vogue, and to point out their limitations and indications according to the author's judgment and experience.

It is not necessary to go into the treatment of the primary sore in this work, beyond saying that the early excision of it has been unsuccessful, and it should be reserved for cases where

the chancre is on the under surface of a long prepuce, and cannot be properly dressed; then circumcision would be indicated. The first question to be considered is, whether specific treatment should be commenced as soon as the indurated chancre comes under notice, as is recommended by the majority of French authorities, or to follow the German school, and wait for the appearance of secondary manifestations. Hutchinson is a strong advocate for the abortive treatment, and asserts that by the early and continuous use of mercury in a mild form, generally one grain of gray powder three times a day, for from six to twelve months, it is possible to suppress the secondary stage altogether, the few exceptions being chiefly those who were intolerant of the drug, and in them the symptoms take a mild form. Few, I think, can claim such an almost uniformly happy experience as this, one of the chief objections to the abortive treatment being that it has so little influence in preventing secondary manifestations, and that by depressing the health of the patient, it renders him less liable to resist the secondary effects. There are several arguments against this; but without possessing the complete confidence of Hutchinson, my own practice would be that, if there is an undoubtedly indurated chancre, a mild course of mercury should be commenced at once; but, if there is any doubt of its being a sore which will lead to constitutional infection, that little harm will accrue by waiting for further development; while if specific treatment be adopted, and no symptoms follow, the patient may have been needlessly subjected to a trying treatment, and his life may be embittered, by his erroneously believing himself to have had a disease so often dire in its effects on himself and others.

Everyone knows that mercury and iodid of potassium are the backbone of the treatment for syphilis. Other drugs, chiefly diaphoretics or diuretics, such as guaiacum, sarsaparilla, Zittmann's decoctions, of which sarsaparilla * is the main ingredient, Tayuya, Dade's bamboo extract, erythroxylon coca, sulphur, and iodoform have had an ephemeral reputation, and, though

*Calomel and sulphuret of antimony are also added, but as they are insoluble salts and the supernatant fluid is poured off clear, there cannot be much mercury in the clear docoction. The remedy, however, still has a wide reputation in Germany, and Alfred Cooper is a strong supporter of it. For its exact composition and mode of administration, see Mixtures, F. 27, among the formulæ at the end.

sometimes useful as adjuncts are quite unreliable by themselves.

Hot baths, especially those containing sulphur, are useful adjuncts to the inunction cure, facilitating the diffusion of mercury through the system. Aix-la-Chapelle and Barèges may be especially mentioned.

The problem of the treatment of syphilis is not, however, so simple as it seems; few diseases require more judgment and experience, in order to secure the best results with the drugs, and, at the same time, to avoid or minimize the injurious effects which their injudicious employment will certainly produce, or which are due to a special sensitiveness to them on the part of the patient. While, therefore, the aim must be to thoroughly antagonize and overcome the syphilitic virus, and remove the various lesions it produces, as they arise, by the internal and external administration of these valuable remedies, the absolute necessity of keeping or raising the vital power of the patient to its highest capacity must ever be borne in mind. In the presence of conditions depressing both the mind and body of the patient, mercury and iodids are often powerless, while, if mercury be given so as to get its depressing effects, mild lesions are often converted into severe ones, a papule becoming a pustule, or a nodule breaking down into an ulcer, and fresh lesions appear.

Mercury may be administered by the mouth, by the skin, and by intramuscular and intravenous injection. If through the skin, it may be given by inunction, by calomel vapor-baths, or by corrosive sublimate water-baths. Corrosive sublimate baths, in the proportion of two grains to the gallon, have been recommended for congenital syphilis, but there are better methods than this.

Where there is opportunity for calomel vapor-baths they are extremely valuable in the early stage, especially where there are extensive eruptions, as the patient has both the external and internal beneficial application of this drug. The mode of administration is given among the formulæ (Baths, F. 4). They are most suitable for robust patients before they are broken down by the disease, and may be given daily, or every other day, watching their effect, and stopping them at once, if they are depressing the patient, as they are liable to do. Where they

cannot be taken daily, it may be advisable, at first, to give some mild preparation by the mouth also. They are also very useful in tertiary ulceration of the limbs, the affected limb only being exposed to the vapor.

Inunction of ung. hydrarg. is another most valuable method, especially where mercury cannot be given by the mouth; in congenital syphilis, it is almost universally employed, but for adults is not used so much here as it is on the Continent, where in conjunction with baths, or Zittmann's decoctions, it is the chief method prescribed. The Aix-la-Chapelle method is a celebrated cure, founded on this plan; it also is explained in the Appendix. A piece of ointment, the size of a hazelnut, should be thoroughly rubbed in daily, where the skin is thin, such as inside the thighs and arms, the flanks, etc., changing the site of inunction frequently, to prevent local irritation or the so-called mercurial eczema being excited, and frequent baths are necessary, to place the skin in a favorable condition for absorption. The chief objection to it is that it is a very dirty plan, requires the patient to give himself up to treatment, which many cannot do, and is difficult to carry out without exciting the suspicion of the patient's friends as to the nature of his malady; patients also can seldom carry it out efficiently for themselves, and it is expensive, and not devoid of risk of mercurialism to the rubber. One great advantage is that damage to the digestive organs, which so often ensues from mercury given internally, is quite avoided.

Hydrargolum (colloid mercury) has been recommended in ten per cent. ointment, as more readily absorbed and less irritating than unguentum hydrargyri. It is equally dirty. Calomel has been proposed as a cleaner substitute for the unguentum hydrarg., seven or eight grains a day being rubbed in. The formula is calomel one part, lanolin four parts, cocoa butter one part. Ruata and Borera claim success with this plan. Mercuriol, an amalgam with tin and aluminium, containing forty per cent. of mercury, has also been recommended, as it has been considered that mercurial inunction is really due to inhalation of mercury. Welander had bags made containing flannel on which ung. hydrarg. had been rubbed. The bag was worn constantly round the neck. Subsequently mercuriol was substituted, and Blaschko strongly advises a cleanlier method, using

mercolint * suspended round the neck. Five grains are placed in a flannel bag and fastened on the skin.

Injections deep into the muscles were strongly recommended by Lewin first, and latterly by many Continental authorities, and by Astley Bloxam † in this country. The buttock, where the gluteus is thickest, is the part generally selected, the trapezius, two inches above the superior angle of the scapula, being the next best place. The needle, which should be carefully sterilized in alcohol, should be plunged deeply into the muscle, and the injections should seldom be given oftener than once a week. They should not be given subcutaneously, as they are more painful, and very likely to produce sloughing.

Various preparations have their advocates. They may be divided into soluble preparations, such as the perchlorid, peptonate, bicyanid, sozoiodolate, the benzoate, the alanin, succinimid, the double hyposulphite of mercury and potassium. Of the above the perchlorid and sozoiodolate of mercury are most commonly employed. The latter is gradually superseding the perchlorid, as it is so much less painful; it is claimed that the double hyposulphite is even less painful. A quarter of a grain of perchlorid in twenty minims of distilled water, with or without a quarter of a grain of common salt, is given once or twice a week. Bloxam says once is sufficient. The formula for the sozoiodolate, which is the salt I use, is sozoiodolate of mercury and iodid of sodium, of each three grains, distilled water ℥iv; inject twenty minims into the buttock once a week. The iodid of sodium is required to make the mercury salt soluble. The double hyposulphite is dissolved in distilled water the twenty-fifth of a gram to ten grams; a cubic centimeter of the solution is equal to one-sixth of a grain of corrosive sublimate.

The insoluble salts are calomel, the yellow oxid, or Lang's gray oil; and the salicylate,‡ the oxyphenate, etc. Those chiefly employed are calomel, the yellow oxid, and Lang's gray oil. Jullien recommends one and a half grains of calomel with a cubic centimeter (about fifteen minims) of petrolene every

* Ordinary cotton, homogeneously permeated with mercury, by Beiersdorf.

† *Lancet*, August 21, 1886.

‡ Symptoms of acute poisoning following a single injection of four centigrams is recorded by Glagoleff in Russia. Abs. in *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 177.

second week for several months, and then every twenty-five or thirty days. The yellow oxid is given suspended in gum-arabic water, gr. 16 of the yellow oxid, gr. 20 of gum arabic, and distilled water ℥j. Some prefer vaselin oil, but the gum solution is the least injurious. One grain is the usual dose. Lang's gray oil is made with vaselin. The parasiticide combinations have no real advantage, the effect being in proportion to the mercury contained in the salt. Other formulæ are given in the Appendix. It is claimed that the insoluble salts have a more continuous action than the soluble salts, and that calomel is gradually converted into the perchlorid; but this is a source of danger, for if mercurialism sets in, no control can be exercised over further absorption. I would, therefore, never choose the insoluble salts.

The symptoms, no doubt, often yield very rapidly to the injection method, but its actual curative effects are not superior, relapses being just as frequent and severe, and indeed even more frequent,* as the injections are seldom tolerated long enough to prevent their occurrence. Besides necessitating frequent medical attendance, in spite of the denials of those who advocate them, the injections are more or less painful, and liable to produce inflammation, induration, or abscess, at the site of puncture. I would recommend any medical man who contemplates subjecting his patient to this method of treatment, where the case is not urgent, or there are no special indications for it, to administer one or two injections to himself, and then follow the golden rule. They are also not altogether free from danger. A good many fatal cases have been reported. Runeberg reports a fatal result from the injection of one-grain doses of calomel, Kaposi had a fatal case from Lang's gray oil, and Hallopeau a case of frightful stomatitis; fat emboli in the lungs are also on record.

These serious effects may, no doubt, be obviated in all but a very few hypersensitive persons, by sufficiently prolonging the interval between the injections and using only a small dose, not more than gr. 1-2 to gr. 1 of the yellow oxid, for instance; but there are still some minor inconveniences. The soluble salts may, however, certainly find a place where administration by the mouth or inunction is contra-indicated, in eye or severe

* Marshall in 37 cases had 16 relapses, some bad; in 32 inunction cases there were only 7 relapses.

throat lesions, in which it is important to get the patient rapidly under mercury, and it is a very convenient method for the public services, etc.

Baccelli brought in the plan of *intravenous injection.* A solution of perchlorid of mercury was injected directly into the vein of the forearm. The solution is, perchlorid of mercury one grain, chlorid of sodium three grains, boiled distilled water one thousand grains, a small quantity of alcohol may be added to facilitate solution; stir and filter. The mode of procedure is first to apply a ligature to the arm, as in bleeding, sterilize fine hypodermic needle, plunge it towards center of vein, and then direct it along lumen of vessel; allow a few drops of blood to ooze out to prove that the needle is in the lumen. Then apply the barrel, untie the ligature, and inject ♏xv of the solution.*

There is no pain beyond the slight one of the needle prick, and the action on the lesions is very rapid. Thus Lewin † cured a case of rupia of two months' standing with six daily injections and a gumma on the nose in one. On the other hand, thrombosis of the vein injected is very liable to occur, and perivascular exudation is still more frequent. The advocates deny the frequency of thrombosis, and say it is due to wounding the vessel; but I saw the treatment carried out by a most careful surgeon, and three veins became thrombosed in a very few injections. The treatment, therefore, must not be lightly undertaken, and it is only suitable where it is important to get the patient very rapidly under the influence of mercury, or, where he is intolerant of mercury, by other methods. It should not be used in out-patient practice, as the patient must be under close supervision. It has not been proved that the effects are more permanent, and that tertiary symptoms are avoided.

Lastly, there is its administration by the mouth, which is, as a rule, the most practicable and convenient. The forms most employed by the mouth are hydrarg. c. creta and pil. hydrargyri for the milder, and calomel, the perchlorid, the green and red iodids, and the bicyanid for the stronger preparations. Inasmuch as it is desirable that the patient should be kept more

*Chopping reports eighty-four cases in which he used twenty minims of a one per cent. solution of the cyanid daily without any thrombosis. Easily controllable salivation occurred in two cases.

† *Lancet*, February 18, 1899.

or less under the influence of mercury from one to two years, and sometimes longer, I prefer the mild preparations, which are efficient, and at the same time less likely to produce irritation of the alimentary canal, with griping and purging. One to three grains of gray powder, or blue pill, are given three times a day, guarded, when necessary, with two or three grains of Dover's powder, and continued till the eruptions or other symptoms are gone, and the patient begins to show evidence of the constitutional effects of the drug, such as slight salivation or tenderness of the gums; the dose or frequency is then reduced, until the patient can just tolerate its influence without unpleasant effects. Frequent brushing of the teeth, and rinsing the mouth with alum and chlorate or permanganate of potash solution should always be enjoined, and the patient should smoke very little, or not at all. About every six weeks, a week or ten days' course of iodid of potassium, in three- to five-grain doses, three times a day, may be substituted for the mercury, in order to bring back into the system, in an active condition, the mercury which had become inert in the tissues. If, at the end of six months, the patient has been free from symptoms for two or three months, he might wait a month, go to the seaside or other invigorating climate, and then have another six weeks of mercury only. In this way a year may be spent, and if he still remains free, then he may have a six weeks' rest and a six weeks' mild course of mercury, to be followed by a week or two of iodid of potassium, and so on through another year; if still free, he might leave off treatment, watching carefully for any relapse, which must be the signal for the immediate resumption of mercury.

All through the course the patient should guard against exposure to chills by wearing flannel next the skin, etc., keeping regular and early hours, avoiding sexual congress for his own and others' sake, and other excesses of all kinds, taking moderate exercise, and spending as much time in the country, or sea-air, as his circumstances permit. His diet should be generous but digestible, and as for alcohol, the less the better as a rule, though claret and the lighter wines may be permitted sometimes.

The green iodid, calomel and opium, etc., are preferred by many; they are valuable when it is important to get the patient

under the influence of mercury in a short time, as in threatened iritis, when gr. 1-2 to gr. 1 of the green iodid, or calomel gr. 2, pulv. opii gr. 1-4, may be given every four hours. Otherwise, I prefer the mild preparations, as the green iodid is so liable to produce irritation of the alimentary canal, in consequence of which the drug may have to be suspended for a while, and valuable time is lost, besides that such irritation is more readily again excited, after it has once occurred. Moreover, in urgent cases intramuscular or intravenous injections might be employed without damaging the digestive organs.

In whatever way mercury is administered great care should be taken to avoid severe salivation; when large doses are being given the patient should be seen daily, and with smaller doses—until his tolerance, or intolerance, has been ascertained—he should be seen two or three times a week; at the same time, it is often necessary to push the drug up to the point of tenderness of the gums or slight salivation. If from idiosyncrasy, or other cause, salivation occurs, the bowels should be freely opened with saline aperients, the mouth frequently washed out with chlorate of soda or potash gargles, and the soda salt taken internally in ten- or twenty-grain doses, and some give even larger doses. Iodid of potassium must not be given at first, for though it eliminates the mercury it brings what was inert and deposited in the tissues back into the circulation, and may thus aggravate the salivation to a dangerous degree.

In the tertiary or relapsing stage mercury is often required, but it must be given in small doses, and generally with tonics; the perchlorid gr. 1-32 to gr. 1-16, combined with three to five grains of iodid of potassium, forming the red iodid of mercury, which is dissolved by the excess of iodid of potassium, is one of the favorite combinations; it may be given with any bitter tonic, except cinchona. This combination, often called the mixed treatment, is by many given in the secondary stage also. This, in my opinion, is seldom a good plan, as the mercury is eliminated by the kidneys almost immediately after ingestion, and very often the symptoms return almost immediately after its being left off. Even in the tertiary stage, in which it is often most effectual in removing the lesion, a separate very mild course of mercury is required subsequently. Reduced iron, gray powder, and chamomile extract, a grain of each, is also a good combina-

tion. Only in visceral syphilis, with threatening symptoms, are the more vigorous methods of giving mercury required.

Iodid of potassium, sodium, or ammonium have all their advocates, but the potash salt is the one chiefly employed, on account of its great diffusibility, and is the salt referred to unless otherwise stated. It is useful in all stages, but in the secondary period is used by me only to wash the insoluble albuminate of mercury out of the tissues; many believe, however, that it is really curative. Some believe in combining the three iodids.

In the tertiary period it is most valuable, on account of its wonderful capacity for procuring the disintegration and absorption of gummatous growths or infiltrations, wherever they may be situated, but especially in bone. In the early stage three to five grains may be sufficient; in the later, five to ten grains are enough for most cases, but some people require larger doses before any effect is seen, twenty, thirty, even sixty grains freely diluted, three times a day, being given with benefit; but it is always wiser to begin with a moderate dose and increase it as far as may be necessary. Some patients, on the other hand, are very sensitive to its action, a few grains exciting severe headache, coryza, etc., so that the patients think the remedy worse than the disease; such patients may, however, be taught tolerance by beginning with one-eighth of a grain, and increasing by similar increments daily until a grain is attained to, and then adding a quarter of a grain to each dose till three to five grains are reached. Leistikow claims that in such cases iodvasogen (six to ten per cent.) inunctions produce all the good effects of the iodids, and only rarely produce nasopharyngeal catarrh; forty-five grains may be rubbed in each day for three weeks.

It is usually preferable to prescribe the iodid with bitter tonics, such as gentian, calumba, etc., and give it after food, to prevent disturbance of digestion. Carbonate of ammonia or sal-volatile is often prescribed with the idea that the action of the iodid is thereby increased and its tendency to produce coryza diminished. I have, however, never seen any reason to believe that it does one or the other, but there is no harm in adding it. Bumstead says that the chlorid of ammonium increases the action of the iodid if given in equal quantities, but it is a very nauseous salt. Belladonna and nux vomica are also said to prevent

coryza, but their efficacy is not very great. Some of the gastric symptoms may, it is said, be avoided by giving the salt with maltine and pepsin wine. In some people its prolonged use produces gout, probably by setting up catarrh of the alimentary canal. I have sometimes found it necessary to prescribe a small dose of bicarbonate or citrate of potash with the iodid in such cases. The diminution in sexual power and appetite, produced by prolonged administration, can generally be overcome by general and local tonics after the omission of the iodid. The prevention and treatment of iodid eruptions are discussed elsewhere.

It should always be borne in mind that, while the iodids act in the most gratifying manner in healing ulcers, removing infiltrations and gummata, relieving pain or sleeplessness, etc., their effect seems to be exerted locally on the diseased products, while it has little or no power over the virus itself, so that the symptoms are only too apt to return sooner or later, when the iodid has ceased to be given; in other words, the disease is scotched, not killed, by iodin. Mercury, and mercury alone, aided by time and good hygiene, has any real curative influence.

The iodids of sodium and ammonium are preferable sometimes where large doses are required, as in large doses potash salts are very depressing to the heart; the ammonium salt should always be prescribed with carbonate of ammonia to prevent its too ready decomposition. Although they contain more iodin in proportion, on account of their different atomic weights, in other respects, on the whole, they are less efficacious. Rarer salts, such as the iodids of strontium, lithium, calcium, and rubidium, have had their advocates, but the only one of any real value is the rubidium salt, which is said to be nearly or quite as good as the potassium iodid and better tolerated.

Larrieu's method is to give three minims of tincture of iodin with fifteen grains of iodid of potassium in a half a tumbler of water every morning before breakfast. It has the advantage of freeing the patient from medicine-taking for the rest of the day. I have found it useful in the tertiary stage, but he uses it at all stages without mercury, unless there is iritis or other urgent symptoms.

A general tonic treatment is frequently necessary at all stages of the disease. Sometimes iron may be combined with the

specifics, *e. g.*, the syrup of the iodid of iron; cod-liver oil, with or without iodin, is also often necessary. Sometimes it is best to suspend the specifics and give the mineral acids and nux vomica or cinchona, quinine and iron, etc. It is instructive, sometimes, to notice how, when specifics fail to exert their wonted influence, after a course of tonics, a sojourn at the sea-side or in the country, or careful feeding up of a badly nourished patient, the mercury or iodid again becomes efficacious.

Iodipin is another form of giving iodin for which good results are claimed. It is made in ten and twenty-five per cent. strength dissolved in sesame-oil; ʒj to ʒiv of the ten per cent. solution may be given three times a day either in capsules or in hot milk. It may also be injected into the buttock, a Pravaz syringeful with a large nozzle being required.

The *local* treatment of syphilids, though frequently unnecessary, generally hastens their disappearance, and may be essential to effect it. When they are extensive, the calomel vapor-baths, already described, are the best means of getting at them. For the superficially ulcerated throat, a perchlorid of mercury gargle two to four grains to ʒviij of distilled water, used three or four times a day, soon produces improvement; or calomel may be applied by local volatilization, or, what is quite as good, and simpler, by connecting a glass tube containing the calomel to an india-rubber ball and puffing it on. Mucous tubercles also soon yield to the local application of calomel, or a slight application of sulphate of copper or of the stick of nitrate of silver sometimes hastens their departure, as well as that of superficial ulcerations, but it should be only sparingly resorted to. The parts should be washed two or three times a day with a 1 to 1000 corrosive sublimate solution, and the adjacent surfaces separated by absorbent or iodoform wool. Ulcerations, whether secondary or tertiary, may be cleaned up and healed, by local calomel fumigations, by dusting on iodoform or iodol two or three times a week, and using black or yellow wash on lint cut to the size of the sore and covered with oiled silk. When, as in rupia, they are too numerous, or in awkward positions to keep on dressings, iodid of starch paste, recently made and painted on, generally induces them to heal in a kindly way. I have found it a very convenient and effectual plan for both rupial and tertiary gummatous ulcers to pack each ulcer with alem-

broth wool night and morning; foul ulcers clean up and form healthy granulations very rapidly, and where the ulcers are numerous the facility of application adds to its value.

Nodules or infiltrations of the skin, whether secondary or tertiary, may be treated by rubbing in gently unguentum hydrargyri, either pure, or diluted if there is much hyperemia. Oleate of mercury two to ten per cent. is more cleanly than the ung. hydrarg.; the mercurous salt is the more efficacious, and should be made by chemical combination. Mercurial plasters are also convenient and efficacious; the emplastrum hydrargyri of the English or German Pharmacopeia, Beiersdorf's paraplast of fifty per cent. mercury and 7.5 per cent. carbolic acid, and the emplastrum Vigo of the French, are good examples of these plasters. They may also be used round ulcers packed with alembroth wool as above. Hypodermic injection of one or two grains of iodid of potassium, in a dilute watery solution beneath the lesion, acts very rapidly, but is rather painful.

Eruptions on the face are a great trouble to the patient; for these the weaker preparations of mercury are generally preferable, the ammoniated mercury ointment twenty grains to the ounce, the oleate of mercury one or two per cent., and sometimes at night, the diluted nitrate or ung. hydrarg. When there is much hyperemia, it is often desirable to commence with ordinary astringents, such as calamin lotion, as in such cases the mercurials may be too stimulating at first. Rhagades at the mouth or nostrils yield to painting with hyd. oxid. flav. gr. 10 to adipis ℥j, or to the calomel cream of the Lock Hospital, calomel ʒj, oleum olivæ ʒij.

The obstinate palmar and plantar syphilids of the tertiary stage become amenable to treatment, if the thickened epidermis be first removed; it may be done by rubbing it down with pumice stone, a corn rubber, or glass paper, or by the application for several days of Unna's salicylic plaster; ung. hydrarg. should be subsequently rubbed in. Some use a potash lotion for the same purpose, but if there are any fissures it is very painful. On the soles, where the horny cuticle is often very thick, it may be first shaved down with a razor, but without this preliminary the treatment is very unsatisfactory. The fissures, ulcers, white patches (leukoplakia), etc., of the tongue often give great

trouble in the relapsing period. All sources of irritation, such as smoking, the use of condiments, etc., should be interdicted, and irregular or tartar-covered teeth removed. The mouth should be washed out with weak Condy's fluid when the teeth are cleaned, which should not be less than twice a day, and then a two or three per cent. solution of chromic acid should be painted on daily; this generally gives great relief, and is not very disagreeable. Less pleasant, but useful in obstinate cases, is a one to three per cent. perchlorid of mercury solution, but the brush must not be dipped directly into the bottle, or the solution soon gets inert. In severe cases Hutchinson's plan of painting on the strong acid nitrate of mercury, though painful at the time, will give relief for a month or two, and does not require to be used more than once in three months.

In tertiary syphilis the large part played by local irritation in producing the lesions must be borne in mind, and as far as possible means must be adopted to prevent such irritation.

In *congenital syphilis* inunction of ung. hydrarg. is generally the best method; a piece of ointment the size of the end of the finger should be rubbed on the flannel binder daily, and the child's movements work it in, the position for its application being changed from time to time, to prevent local irritation. This treatment may be continued until all symptoms have disappeared, and for a month or two longer, but with diminished quantity; cod-liver oil, with or without maltine, and steel wine or other form of iron, are often necessary adjuncts. After the mercury has been left off, syrup of the iodid of iron is a suitable tonic. The child should be kept under observation for a least twelve months. Where there is much skin eruption, the ointment cannot always be applied, and then a grain of hydrarg. c. creta can be given three times a day to the youngest infant, and if, after some time, diarrhea is produced, some pulv. cretæ comp. may be given with it, but this is seldom necessary. The erythema of the buttocks is best treated by dusting on ℈ss to ʒj of calomel to ʒj of starch powder. To the condylomata, or mucous tubercles, a little pure calomel may be applied, paying great attention to cleanliness, and keeping the parts as dry as possible; changing wet napkins at once is of course necessary. The nostrils must be frequently cleared out, and if the child cannot suck well it should be fed with a spoon without delay. Careful atten-

tion to hygiene in every way is highly important. Except in the way already indicated, local treatment is seldom required for the skin lesions, the effect of the internal administration of mercury being almost magical in the majority of cases, unless treatment has been too long delayed, so that the nutrition has already suffered considerably; indeed, as a rule, the prognosis is good or bad in proportion to the nutrition of the child when it first comes under treatment.

LEPRA.*

Deriv.—λέπρα, leprosy.

Synonyms.—Leprosy; Elephantiasis græcorum; Leontiasis; Satyriasis. *Fr.*, La lèpre; *Ger.*, Der Aussatz; *Norweg.*, Spedalskhed.

Definition.—An endemic, chronic, constitutional disease analogous to syphilis, and varying in its morbid manifestations, according to whether the brunt of the disease falls on the skin, nerves, or other tissues.

Leprosy has ceased to be one of the diseases of England † since the sixteenth century, and is now met with here only as an importation; but it is still rife in Norway, and to a less extent on the shore of the Baltic, and of late years in Russia; it is said to be spreading in the south of France and Spain, and it is frequent on the northern littoral of the Mediterranean, Turkey, Roumania, and the whole Balkan peninsula, and some other parts of Europe. Many instances of its different forms have

* *Literature.*—Danielssen and Boeck. "Traité de la Spedalskhed" (Paris, 1848. French translation). Vandyke Carter on Leprosy and Elephantiasis (1874). Hillis, "Leprosy in British Guiana" (1881). Leloir, "Traité de la Lèpre" (Paris, 1886). Thin, "Leprosy" (1891), a *résumé* in 280 pages. The Journal of the Leprosy Committee. "Leprosy in its Clinical and Pathological Aspects," by Hansen and Looft. Translated by Norman Walker, 1895. Five clinical and eight microscopical plates. *Trans. Berlin Leprosy Conference*, 1897. *The International Journal, Lepra*, vols. i. and ii. Babes, "Die Lepra" (1901), and Santon, "La Léprose" (1901), with illustration and plates.

† In *Lancet*, September 16, 1899, Dr. Ross McMahon records a case of a man who had never been out of England, but such a case would require to be reported on by experts before it could be unreservedly accepted.

come under my care at various times, but it is only from those who have long studied the disease in its native haunts—such as Danielssen and Boeck, and Hansen in Norway, Vandyke Carter in India, and Hillis and Beaven Rake in the West Indies—that we can glean a complete account of its numerous manifestations, and in the following description I have followed those writers, especially Hillis, pointing out where my experience differs from theirs.

The disease occurs in three forms—the Nodular, the Maculo-anesthetic, and the Mixed.* The nodular is the most common in Europe, the maculo-anesthetic in the tropics, and the mixed is nearly always less common than either of the others. Although they form a pathological unity, these varieties are so distinct clinically as to require separate description. In the nodular form the brunt of the disease falls upon the skin; in the maculo-anesthetic, on the nerve trunks, and in the mixed, on both nearly equally.

In advanced cases the tendency in a large proportion is to merge into one another.

Nodular Lepra constitutes over fifty per cent. (Kaurin says seventy per cent.) of the cases in Norway, about twenty per cent. in the West Indies, and not more than ten per cent. in the East Indies. No less than five stages may be recognized: first, deposit with prodromata and fever; second, eruption; third, nodulation; fourth, anesthesia (not constant); fifth, ulceration. The prodromata which nearly always attend the onset are of the following kind: debility, depression, dyspepsia, diarrhea and drowsiness, listlessness, a frequent sense of chilliness, especially at night, profuse perspirations and marked vertigo, temporarily relieved by recurrent epistaxis. Then, perhaps, after a chill or other depressing influence the febrile symptoms set in.

Their onset is marked by a rigor, and a temperature which may rise to 104°. The pyrexia is of a remittent, an intermittent, or rarely of a continuous type, and is often mistaken for ague; the drowsiness and sweating become more marked, the patient feels restless, the tongue is red, the pupils sluggish,

* These correspond with the terms in previous editions of tuberculated, non-tuberculated, and mixed tuberculated of Hillis; the two first terms are those of Hansen.

and the pulse quick and feeble. These febrile symptoms may set in abruptly without any prodromata, it may be, several months or even years after exposure to the leprous influence. After they have lasted for a variable period of days, weeks, or months, the exanthem or "leprous spot" appears, coming first with edema of the eyelids, on the prominent parts of the face and ears, and then on the limbs, occupying the front of the forearms and the outside of the thighs. The eruption is of an erythematous character, varying from a bright to a purplish or mahogany red tint in fair people, and there is leprous deposit, not mere hyperemia, from the first. It is in well-defined, shiny, slightly raised patches, of from one to several inches in diameter, and distinctly hyperesthetic; these patches may fade to an orange tint or altogether disappear and reappear after an interval, each time with febrile symptoms, and this may go on for weeks or months before the next stage of nodulation sets in, or they may be persistent, becoming more conspicuous if the patient gets warm.*

In a young lady, æt. fourteen, they were very bright, and the forehead and chin were something like an erythema nodosum in the wrong place, but they had been out several months. The disease began with symptoms supposed to be due to rheumatic fever seven years after she left Ceylon, she having been quite well in the interval. On the other hand, there may be a total absence of general symptoms, not only when the skin eruptions are of very slow development, but even when the eruption comes out somewhat acutely. Thus, in a boy of seven from British Guiana, who had been perfectly well until six weeks before I saw him, a red patch came out on the left cheek one inch across, then the right ear became red and swollen and shapeless, and other lesions appeared in various parts of the trunk and limbs. The boy had not been, and was not when I saw him, unwell in any way whatever, and was bright and

* Francis S., æt. fourteen, U. C. H., born of healthy Scotch parents in the West Indies; while there he had repeated attacks of what were considered to be erysipelas of the right leg going on for seven years, and it was not until he had been six months in England that nodulation set in, after a severe rigor and febrile symptoms of a few days' duration, but with no erythematous eruption, the first nodules appearing on the site of a recent burn on the heel. The subsequent course was very much the same as above described.

lively. I have seen diffuse erythema over the face and greater part of the body.

After the first, or one of the subsequent exanthematous attacks subsides, the eruption fades, crops of minute pink elevations, grouped or scattered, appear on the site of the previous rash, the papules enlarge to the size of a split pea, and form yellowish-brown nodules, and some of these may enlarge much more, even to the size of a hen's egg, or they may gradually coalesce into a diffuse infiltration, or the infiltration may be produced directly, by the erythematous patch thickening instead of resolving, and may thus form regular plateaus of large size, and, like the nodules, of yellowish to dark brown color. In fair races, when the disease is of moderate severity, ovals or circles with broad borders and clear white centers may arise, and fresh nodules may also develop on the infiltrations. As a rule, nodulation does not develop until from three to six months after the commencement of the disease; as the nodules and infiltrations become fully developed, the hyperesthesia subsides, and may be replaced by diminished sensibility or even complete anesthesia, if the infiltration is considerable, simply from pressure of the leprous material on the peripheral ends of the nerves. Nodules may come anywhere, but they are most common on the face, limbs, breasts, scrotum and penis, round the arms and in the axillæ, but are rare on the back, neck, soles and palms, and still more so on the elbows and knees, while they are said never to occur on the scalp * and glans penis.† The mucous membranes also get involved, including those of the eyes, nose, mouth, and tongue, larynx, trachea and large bronchi, uterus and vagina. The fate of the nodules and infiltrations varies; some resolve and leave only stains, others atrophy, but leave atrophic scarring, while others again soften, break down, and ulcerate, forming indolent, sharply defined, red-glazed sores with yellow "glairy mucous discharge of peculiar odor," which at first can be healed with appropriate treatment, but not as the disease becomes advanced. When the dis-

* In John C. N., U. C. H., a mixed case, there were a few nodules on the scalp; in Evan S., U. C. H., there were one or two on the palms. References to other palmar cases are given in a paper by Montgomery, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xvi. (1890), October No.

† Glück has seen nodules and flat infiltration on the glans penis in ten cut of forty cases, *Lepra*, vol. i. (1900), p. 10.

ease is fully developed, the face gets the characteristic leonine appearance from the thickening of the skin between the natural wrinkles of the forehead, which thus appear deepened, and give a stern and aged look even to children; the cheeks, unless the nodules remain discrete, look enormously puffed out and pendulous, and the skin is very soft and satin-like; the lips are swollen and everted, and with the nose and chin are covered with nodules; the ears project conspicuously, are often, even at an early stage; much thickened and covered with nodules, and the lobe especially is very large, soft, and pendulous, and may be the only part of the ear attacked; the hair is preserved on the scalp, but is lost elsewhere; the nails are thin and papery, split, flake, and drop off, sometimes to be renewed in the shape of horny pegs, but they may recover completely.

A somewhat different picture is presented in many cases in which nodulation is a late manifestation, there being simply a uniform infiltration deepening the natural lines, but the surface is otherwise smooth. In white people there is a yellowish-brown tint, or in cold weather a slate-colored lividity. Nodules appear eventually.

In males the testicles atrophy, the breasts enlarge, and sexual power is lost; women become sterile; the voice gets croaking from nodules in the larynx, there is snuffling from thickening of the nasal mucous membrane, a kind of pannus may ensue on the conjunctiva and cornea, and interstitial keratitis and corneal nodules, and, still worse, a chronic irido-cyclitis may lead to blindness.* Dr. Lie has found lepra bacilli in almost all the structures of the eye, even in an apparently cured maculo-anesthetic case.

From time to time exacerbations occur, with enlargement of the lymphatic glands, especially the femoral, and febrile symptoms of the same character as before; and after each attack

* For a full account of the eye changes, see Bull and Hansen, "The Leprous Diseases of the Eye" (translation, with colored plates, published in London, 1873), and "Leprosy as a Cause of Blindness," C. F. Pollock (Churchill, 1889). "Die Lepra des Auges," by Syder Borthen, with "Pathology" by H. P. Lie, published by W. Engelmann, Leipzig, 1899. Also "Notes on Ocular Leprosy," by A. Neve, *Brit. Med. Jour.*, May 12, 1900. who reports lesions of lids, conjunctiva, cornea, iris, and globe, but not the lens, in Kashmir Asylum.

fresh nodules are formed. Acute orchitis occurred in a case of Hallopeau's. These attacks occur about four times a year, at the change of the seasons, in the tropics (Hillis),* but less frequently in colder climates, and are the milestones on the downward road. Ulceration eventually sets in, at first only in single nodules and spreading slowly, but sometimes it is phagedenic and rapid, and in either case enormous areas may get involved and lead to the death of the patient by exhaustion, or death may ensue from interference with the air passages or from other internal deposits. Forty per cent. perish from the direct effects of leprosy, while another forty per cent. die from renal and lung complications, and the rest from diarrhea, anemia, etc. The mutilations of the maculo-anesthetic form are never present in this.

In the dark races the "leprous spot" is a bright red, the sweatings are accompanied with oiliness, and the skin is always very greasy, with dilated sebaceous openings. The nodules at first are translucent and quite solid, but eventually get blacker even than the black skin that they are on; this is true also of the involuted erythematous exanthem. The surface is very scaly, sometimes so much so as to mask the disease. In advanced cases Hillis describes a peculiar mottling, like a richly grained wood, on the belly, and mapping out the spinal cord behind.

In a large proportion of cases there are comparatively few lesions on the trunk even in advanced cases, the face and limbs being chiefly affected.

Variations.—It must be borne in mind that skin lesions may develop without any prodromal manifestations, either acutely or slowly and insidiously. Thus a man on the Zambesi was quite well until he had a sunburn on the shoulder from a hole in his shirt; the next day red spots broke out all over his body and limbs, and increased till he was a uniform red color. This was soon followed by great pains in the feet, and the disease developed on the usual lines, but it was a year before the features thickened very noticeably. In a gentleman who had contracted the disease in India three years before the sole manifestations were yellowish-brown slightly raised, hemp-seed to

* Some of my cases have had intervals of several years between the febrile exacerbations.

large pea-sized papules, rather numerous on the trunk and limbs. He had not been in any way different from his usual health, and there were no sensory symptoms before or following the eruption. Three years later also there were no fresh symptoms beyond an increase of the skin lesions; a few months later most of the eruptions had disappeared.

In a boy of seven from British Guiana a red raised patch on the left cheek was the first sign without any general symptoms. Other red patches developed rapidly, but without disturbing the general health.

In other cases, again, there may be one or two nodular lesions which have developed slowly without any other symptoms for months or years. In a case of Pellizzari's, the only lesion was an achromic area surrounded by a pigmented area on the right arm. Hansen's bacillus was found.

In children small nodules come comparatively early on the alæ nasi and lips.

When there is an hereditary taint, Hillis has observed "that sores or abrasions become indolent and unhealthy, general diseases are less amenable to treatment, and in the black races the skin is scaly, shiny, and variegated, the lymphatic glands are enlarged, and the patient has a cachectic look, the features are coarse and unsymmetrical, the head looks too large for the body, the functions are imperfectly performed, and the skin has a peculiar soapy feel, while mentally the patients are dull, listless, and apathetic." Voight * made a careful examination of the tissues of a child of five weeks, who was born in a leper asylum of leprous parents, and found no bacilli or other leprous changes in the skin or other organs.

The disease comes out in such cases before they are twenty, generally from ten to twenty, but rarely under three years of age, very few, if any, under twelve months, and there are only one or two more than doubtful instances on record, of the infant being born with it. The absence of congenital cases will be discussed under heredity. But Danielssen and Boeck record that the parents of some affected children have stated that they were born with bluish spots, on which nodules subsequently developed.

* *Vratch* xx. (1899), p. 485. Abs. *Amer. Jour. Cut. Dis.*, vol. xvii. (1899), p. 323.

Maculo-Anesthetic Lepra is the most common tropical form, constituting two-thirds, while in Norway it is only one-third, of all the cases.

Three stages may be recognized in the course of the disease, but they may be ill-defined in some cases: (1) that of development; (2) of spreading; and (3) of permanency. The first lasts one or two years, and includes the prodromata, the eruption, and the commencement of atrophy. The prodromata differ much from those of the nodular form. Febrile symptoms are absent, but a frequent sense of chilliness, especially towards evening, is experienced; malaise, and perhaps gastric and circulatory disturbances, may be present. But the most characteristic symptoms are pain and tenderness in various places, a general hyperesthesia of the skin, and shooting, lancinating pains, compared to electric shocks, which traverse certain nerves, especially the ulnar, the median, the peroneal, and the saphenous, accompanied by a burning sensation, and tenderness along their course.* In a gentleman, æt. thirty-two, from Jamaica, the first symptom, four years before, was intense itching between the toes, and soon after brown spots appeared on the leg. In the same way, the involvement of other nerves was marked by severe itching, followed by numbness, but he never had pain, but felt pricking and "pins and needles" down the limb when the peroneal or ulnar nerves were tapped. Drowsiness, lassitude, and depression were the only general symptoms. Weakness of grasp and numbness in the course of the nerve are early symptoms, and the ulnar is generally the first

*In the case of a boy, J. H., E. L. H., the symptoms began at the age of four years, in Suffolk, apparently with an attack of ague, eight months after his leaving Singapore. The eruption preceded by a very short interval the nerve symptoms, which commenced with numbness and weakness of grasp; but there were no pains nor early bullous eruption, and in about twelve months his ulnar nerves were completely paralyzed, and the median partially. Subsequently complete paralysis of the hands developed, and the fingers were clawed. Bullæ came in cold weather, and the characteristic, peripherally spreading eruption appeared, preceded by an erythematous exanthem; but there was only diminution of sensibility in the atrophic area. In this case the ulnar nerves, which were much thickened, were stretched without effect. He was under observation for six years, and died, æt. thirteen, in the hospital with pyemia and ulcerative endocarditis; but this did not appear to be dependent upon the leprosy, as he had been exposed to septic influences.

to suffer, the peroneal being the next commonest. There may be loss of sensation to pain, touch, heat, and cold, or tactile sensation may be preserved and heat, cold, and pain lost, as in syringomyelia, which may be simulated, or perhaps produced.* According to Susuki, the tendon reflexes are exaggerated in anesthetic leprosy. Numerous small bullæ often develop on the fingers and toes in association with the shooting pains, and occasionally the condition known as "glossy skin" may supervene with the characteristic burning pain.

Within a year the more special eruption breaks out, the most frequent positions being the back, shoulders, back of the arms, neck, thighs, round the knees and elbows, on the face and sometimes in the course of nerves, especially the musculospiral; they are very rare on the palms and soles.† The spots or patches come out singly as a rule, are one or two inches in diameter, well defined, but not raised, and of a pale yellow color. They may itch or burn, but are not always hyperesthetic, though Hansen usually found them so, and rarely anesthetic at this stage; but the sweat secretion is absent in them. Fresh patches continue to come out from time to time, but unattended with special symptoms. Sometimes some of the muscles waste, and there is contraction of the little finger, while sensation in the course of the affected nerve is diminished by this time if it has not been before, and thus the second, or spreading stage, is reached in a year or two from the commencement.

With the exception of those on the neck the patches spread peripherally, clearing in the center and forming irregular ovals or circles, or meeting with others, inclose large, gyrately margined tracts. The border is now distinctly raised, hypersensitive, from an eighth to half an inch across, of a yellowish-brown color, and made up of closely aggregated papules which have coalesced more or less, or there may be minute vesicles on them at the edges. The center is atrophic, preternaturally white, thin, wrinkled, hairless, scarlike, and dry from the destruction of sweat glands, and hence, later on, a powdery desquamation is observed.

Anesthesia is nearly always present in the atrophic patches

* In a case reported by Hallopeau and Jeanselme these symptoms appeared during an intense erythrodermic attack.

† Montgomery, *loc. cit.*, one case, and quotes two of Von Bergman's.

as well as in the course of the affected nerves, and slowly extends its area; as a consequence, the patient often gets burns and other injuries unconsciously, and *perforating ulcer* of the foot, starting from a slight injury, may ensue, but it is most common in those who walk barefoot. Another result of the paralysis of the nerve function is the formation of solitary, large bullæ on the extremities. They arise mostly in cold weather, or from some local injury, and leave a very indolent ulcer. They differ from the early bullæ, therefore, in size, number, and cause, the early ones being due to an irritative, the late, consequent on a paralytic condition of the nerve. Fissures of the heel are also common, and dark-colored hyperkeratoses may be seen symmetrically on the front of the legs or back of the hands (Hansen). The diseased nerves can be felt to be thickened, especially the ulnar at the elbow.*

Paralysis is usually a late symptom, and produces flexion of the second and third phalangeal joints, but the first remain straight, much wasting of the muscles and wrist-drop ensue, and nutrition of the nails is damaged so that they become like talons; next interstitial absorption of the bones takes place, or a larger necrosis may occur, leaving the nail still attached to the stump (the so-called lepra mutilans. The carpal bones are seldom destroyed). Sleeplessness is sometimes a trying symptom, but otherwise the general health suffers comparatively little, and much of the lost strength may be regained for some time when the permanent stage is reached, which is generally in about ten years.

The eruption now remains stationary, though by this time nearly all the body surface may have been traversed by it, so that the whole skin is atrophied and white. Other nerves, such as the third and seventh, may be paralyzed, and ectropion and the other consequences of these paralyses ensue, or some muscles of the leg may be paralyzed.

Ulcerations are common, but less extensive than in the nodular cases, though they are often deeper, either from moist or dry gangrene, which spreads until it reaches a joint; a line of demarcation is then formed, and nature performs amputation, often very neatly. Although this may be repeated from time to time, the process is slow and not extensive on each oc-

* See J. H's case, in previous note.

casion, so that the patient's strength is wonderfully preserved, and the sexual power is retained up to a very late period. Ultimately, however, the constitution is undermined, and he succumbs from various causes.

Death occurs in two-fifths of the cases from the direct effects of leprosy, such as ulceration, gangrene, marasmus, or general debility, induced by the leprosy poison. Muco-enteritis accounts for nearly as many, and the rest die from various complications, but nephritis is not a special cause, as in the nodular form, and probably the muco-enteritis is largely climatic. Cases usually last from ten to fifteen years, though life may be prolonged for thirty or even forty. In some of these the disease has really died out, the skin lesions having disappeared, and only the results of the nerve damage left.

In negroes the eruption is of a bright yellow, and is much more conspicuous from the contrast with the dark skin; the vesicles that border the edge of the eruption in the spreading-stage are also more distinct, and when the eruption has traversed a large extent of surface the atrophy of the pigmented part of the skin is much more striking than in the fair races.

In children, unless the manifestations of leprous cachexia mentioned by Hillis are present, there is no special difference in the maculo-anesthetic cases from those of adults.

Variations.—In the maculo-anesthetic form the insidious development of skin lesions without other symptoms is more common even than in the nodular form. Pigmentary anomalies, either plus or minus, may be the earliest symptoms, and according to Hansen and Looft the skin affection is always the first definite symptom of the disease, but this is not in accordance with the observations of others. A woman, æt. thirty-six, who had traveled in India for a year, eighteen months later developed rings on the left thigh and forearm. The lesions were round or oval, one to three inches in diameter, with a raised brownish-red border, a quarter of an inch wide, and a slightly papular irregular outline; the center was faintly atrophically scarred, and there appeared to be slight diminution of sensibility. There were only half a dozen such lesions, and no other manifestation of any kind; during six months that she was under observation a few fresh rings slowly appeared, but two

years later all had disappeared again. Nerve trunk symptoms may or may not develop later. In a boy of sixteen, the sole lesion was a perforating ulcer of a big toe, and anesthesia of a great part of the left foot. This had been going on for two years. Mutilating whitlows with anesthesia may also occur, and if Zambaco Pacha's views be accepted, Morvan's disease as seen in Brittany is only attenuated leprosy. There are, however, a few cases of indisputable leprosy in Brittany, but the long yearly visits of the fishermen to Iceland must be remembered as a probable source of the disease; but Jeanselme reports a case he believes to be autochthonous.

Mixed Lepra is the least common form, constituting about one-sixth of all cases; about half are hereditary according to Hillis, and often each parent has had a different form. In British Guiana, however, Hillis found in 188 cases the following proportions: nodular, two; mixed, three; maculo-anesthetic, six. It begins sometimes with nodular and sometimes with maculo-anesthetic symptoms, but most frequently the latter symptoms take the lead for a few months, and then with fever and the usual phenomena, nodulation occurs. Destruction of the cartilages of the nose sometimes ensues; the soft palate also may be destroyed by ulceration, and constitutes special features of this form. For the rest, the symptoms are a compound of the other two varieties.

The *prognosis* is bad, and if nodulation precedes the anesthetic symptoms the progress is more rapid.

The *diagnosis* requires care sometimes, to distinguish it from syphilis, but the presence of anesthesia will be a certain criterion.

The following is a good example of its mode of onset and course:

John C. N., æt. twenty-two, came to University College Hospital in January, 1885. He was born in Bombay of healthy, well-to-do English parents; he was suckled one month by a native nurse, and lived in Bombay until he was sixteen years old. He ate fish, but it was always quite fresh. The disease began in October, 1879, eighteen months after his return to England, after sitting in wet clothes for three hours, with vomiting, great pain, and swelling of the limbs, ascribed to rheumatism, soon

followed by severe shooting pains down the arms and legs, and great depression, and these pains continued more or less for two years, when he returned to India. Eighteen months later an infiltrated patch appeared, with pain and swelling on the right calf; anesthesia in the left forearm and calf developed in 1882; next a brown patch came on the lower jaw, and in 1883 nodules appeared on the ears, and later on the face and scalp. The disease after this progressed in the usual course; phthisis developed in the beginning of 1886, and he died with general tuberculosis in September of that year.

Etiology.—This must be considered as regards its production and propagation.

Concerning *production*, neither climate, soil, race, malaria, diet, bad hygiene, nor antecedent diseases, such as syphilis, yaws, or ague, can be regarded as anything more than predisposing influences, which favor its onset and development, mainly by lowering general vitality, and therefore resistance to disease.

As regards *climate*, while it is certainly most prevalent in tropical and subtropical countries, it frequently occurs also in cold climates, such as Norway, New Brunswick, and Iceland; in short, it may be found from the poles to the equator, and from the east to the west. Climate seems, however, to have an influence on the form of the disease, as nodular leprosy is most common in Europe, probably from the influence of cold checking the skin action, and non-nodular in warmer climates.

As for *soil*, it may occur in high or marshy lands, in town or country, by rivers or seas; and though it is true in the main that the home of leprosy is in the vicinity of water, even this must not be said without reservation.

Eating fish, especially if salt or unsound, is supposed by some high authorities to be the cause of leprosy, the idea having probably arisen from fish being a staple article of diet in tropical and subtropical countries where leprosy is endemic; but, since in many countries, where, either from religious prejudices or other circumstances, no fish is eaten, yet leprosy is rife, this theory must be regarded as untenable as the sole cause, though if it should turn out, as many suppose, that an intermediary host is required before the bacillus will flourish in the human subject, it would be natural to turn to the food or the water to find the intermediary.

Propagation.—Intermarriage plays a certain part, and in some places, such as the Cape, Provence, Austria, and Galicia, leprosy is limited to certain families which intermarry.

Heredity was considered, until lately, to have an undoubted influence, but most modern authorities dispute its claim to be considered as a factor. Hansen of Norway visited the Norwegian emigrants in America, in some parts of which they form a community, and could not find a single instance of hereditary influence, and he and others account for the family prevalence from the children and parents dwelling together in close relationship and under the same circumstances; in short, they consider it is a *household*, not a *family* disease, and is propagated by contagion therefore. Heredity was never considered to be an important factor as regards numbers. D. Montgomery's cases in a leper family show the sources of fallacy in apparent heredity.

*Contagion.**—The question whether leprosy is contagious or not was answered by the College of Physicians' Report of 1867, and that of the Hawaiian Government in 1886, in the negative, while the majority of the recent Leprosy Commission, while admitting that it is contagious and inoculable, consider that contagion plays a very small part in its extension. On the other hand, the Conference on Leprosy held in Berlin in October, 1897, not only agreed that it was contagious, but passed resolutions in favor of compulsory notification and isolation wherever practicable. Non-contagionists still exist, however, among many whose long practical experience in leprosy countries or their careful study of the question entitles their opinions to consideration.

The circumstances that maculo-anesthetic lepra is the prevalent form in India, and that it is most likely, mainly through pus inoculation, or by inhaling bacilli given off from leprous air passages, that the disease is propagated from one individual to another, and therefore chiefly through the nodular form, are probably reasons which have led many authorities in India (to

* *Brit. Med. Jour.*, June 26, 1886, May 24, 1888, and April 19, 1890, pp. 909 and 917. See also November 12, 1887, an article on the "Spread of Leprosy by Contagion," with many cases, and also Besnier's pamphlet, published by Masson (Paris, 1887); also a paper by Poupinel de Valencé, "Is Leprosy Contagious?" *Lancet*, May 17, 1890.

which Vandyke Carter is a notable exception) to deny the communicability of the disease, while most West Indian authorities, with the exception of the late Beaven Rake, are in favor of its inoculability.

The invariable presence of bacilli in the tissues, and the fact that the prevalence of leprosy in Norway has been diminished fifty per cent. in twenty years * by segregation, afford a presumption in favor of the contagious theory corroborated by its spread in previously virgin countries, *e. g.*, Hawaii, British Guiana, etc.

The failure to inoculate animals is not of much weight, as the many failures to inoculate syphilis in animals testify. Moreover Vrondriansky states that if the animals are subjected to starvation, cold, etc., they may be successfully inoculated with leprosy. This requires confirmation.

The evidence grows very strong that under favorable circumstances it may be inoculable in man even by vaccination,† while coitus,‡ prolonged contact, and even breathing in the same atmosphere for a long period, seem to have produced it in some instances.

Arning inoculated a criminal apparently successfully. Subsequently doubt was thrown upon it because it was shown that several members of his family were leprous. Hatch of Bombay reports a case of a student who cut himself while making a post-mortem on a leper; this was followed by symptoms of leprosy, the ulnar nerve being specially affected. Vandyke Carter also saw the case, and concurred in the diagnosis of leprosy; but the patient recovered apparently in about a year. Several attempts at inoculation by the skin have failed, and, as in so many admittedly contagious diseases, some other factors besides the introduction of the microbe to the man are

* Hansen says dropped from 2833 in 1856 to 321 in the asylums in 1895. Isolation is partially compulsory only since 1885. In June, 1902, he reckoned the number of lepers in the whole of Norway as about 400. Many dispute the efficacy of segregation.

† Also Daubler's case. See under Vaccination, Rashes, p. 475. An interesting case is reported by Gairdner in *Brit. Med. Jour.*, June 11, 1887. See also correspondence, August 20, September 5, November 5, etc., by Beaven Rake, Jelly, and Hillis. Arning found bacilli in the vaccine pustule of a leper's arm.

‡ Nevertheless it is rarely transmitted from husband to wife or *vice versa*.

required. All agree that the maculo-anesthetic form is less easily communicable than the tuberculated form. According to Morrow, Jeanselme, Sticker, etc., the entrance of bacilli by the nasal passage is far more frequent than by the skin, an idea that dates back to Pliny. Sticker examined 400 lepers, 153 bacteriologically, and stated that he had discovered the primary lesion in the shape of an ulcer, rarely a nodule, on the nasal mucous membrane, usually on the cartilaginous part. Out of the 153 cases it was absent only 13 times, and bacilli were present in 128 cases. No doubt ulcers of the nose are very common in lepers, but unless they precede other manifestations their presence would be no proof that they were the initial lesions, and there are other acid-fast bacilli besides those of leprosy and tubercle. Babes goes so far as to say that the nares are more likely outlets than inlets. Schäffer says that lepers when talking loudly throw out thousands of bacilli by the nasal and buccal mucous membranes. In an advanced leper in U. C. H., after prolonged blowing on a moistened glass, not a single bacillus could be found. Doubtless there are many methods by which the bacilli may be introduced, *e. g.*, by contaminated food, soil, dirty linen, etc. The mosquito as a possible bacillus carrier must also be borne in mind.

One difficulty in proving contagion is that the incubation, or at all events the latent period, is often very long, the disease sometimes not declaring itself for years * after exposure to the leprous influence, it being generally lighted up by some febrile disturbance or depressing influence. This is necessarily a great obstacle to tracing the real source of the disease in any particular case. Communicability otherwise than by inoculation is doubtless rare under ordinary conditions, and it is probable that it is so only in the same way that phthisis may be communicated by prolonged association in a confined space and breathing a highly contaminated atmosphere. The bad hygienic conditions in which lepers often live in most countries in which leprosy is rife are highly conducive to the spread of the most feebly contagious disease. On the other hand, improved hygiene has in many countries not only stamped out the disease, but

* The longest interval I have met with is eleven years, but Hallopeau relates the case of a man in whom the symptoms first appeared thirty-two years after a fifteen months' residence in Martinique.

prevented its propagation, even when, as in England, many lepers are yearly introduced from without, whatever may be the mode of infection. One fact stands out clearly, that intimate association with lepers is fraught with danger. Even in India the non-contagionist commission showed that five per cent. of those who live intimately with lepers contract the disease, and it is calculated that if this proportion were true for the general population, there would be ten million lepers in India. Lohke of Oesel relates that a leprous woman came into a leprous free district and lived in a house with seven other sound men and women, all developed leprosy; and many similar though less strong instances could be adduced.

Pathology.—No one now disputes that the disease is due to special bacilli which lead to the formation of granulation tissue either nodular or infiltrating, and a low form of inflammation, and that for a long time the lesions are either in the skin or peripheral nerves or both, while visceral infection is a late phenomenon. In its general behavior it resembles in some ways syphilis, and in others tuberculosis. It has, however, its own peculiarities, and the most striking of these is its extreme slowness in evolution and course.

Anatomy.*—The pathology and anatomy of leprosy has been investigated by a host of observers, but the important discovery of the pathogenic bacillus was made by Hansen of Bergen in 1873 in unstained preparations, and soon after both he and Neisser succeeded in staining it. Both in staining reactions, appearance, and dimensions it closely resembles the tubercle bacillus, but is somewhat shorter and takes the stain rather more readily, and both bacilli are acid-fast, *i. e.*, not easily decolorized by mineral acid solutions; the substance which takes the stain in the case of the tubercle bacillus, and probably, therefore, in the lepra bacillus, being, as Bulloch and Macleod have shown, a sort of wax. The bacilli are variable: they may be straight, slightly curved, tapering at both ends or at one end only, the other being knoblike, or both ends may be thickened. Cornil states that they are larger in parenchymatous organs, such as the liver and testicle, than in the skin nodules. A row of minute clear rounded spaces may sometimes be seen, but whether spores or part of an involution process is a matter of dispute.

Unlike human tubercle bacilli, those of lepra are found in sections of the nodules in huge quantities, chiefly aggregated in groups, bundles, and colonies, but similar features have been observed in avian tuberculosis.

* Leloir, "Traité pratique et Théorique del a Lèpre," 1886; Unna's "Histopathology," 1896, p. 616; *Trans.* Lepra Conference at Berlin, 1897; Babes, "Die Lepra," 1901.

So far lepra bacilli have neither been successfully cultivated outside the body* nor inoculated into animals, and even direct attempts to inoculate man—*e. g.*, Danielssen's experiments on himself—have failed. Those of Arning have already been discussed.

There has been much dispute as to the position of the bacilli, but it is now admitted that they may be either intra- or extra-cellular, but mainly extra-cellular. Unna states that the "globi" are not cells, but gleal masses, which Pernet suggests are a resting-stage of the parasite. The bacilli have been found in all the viscera of the body, as well as in the nerves and nerve centers, the bones and bone marrow, but they are especially plentiful in the skin nodules and mucous membranes and their ulcers, the spleen, liver, and testicles, while in the lungs both tubercle and lepra bacilli are often found together, lepers being frequent victims to phthisis.

They are said not to be found in bullæ or blister contents, except when they are over nodules or infiltrated skin, but they have been found in vaccination vesicles of nodular lepers by Auche and Carrière, Arning and Simpson. While bacilli may perish in the tissues in the course of time, and apparent cures result, Hansen does not believe in their stability, and thinks there always remain some foci of latent bacilli, which are liable to become active under circumstances favorable for their development.

Histologically, a leprous nodule is an infective granuloma produced by the bacillus either in the derm or hypoderm, separated by a narrow zone from the epidermis. The bacilli are abundant in the fat, but not in the sebaceous glands; but while they may be found in the hair follicles, it is disputed as to whether they are in the sweat coils. In addition to the bacilli the nodule is composed of lymphocytes, plasma and mast-cells, large flat giant cells, vacuolated cells, and the cells of Langhans, but Hansen and Looft think that the last were really in tuberculous, not leprous, growths.

The bacilli infect the vessels, especially the endothelia, so that even thrombosis may be produced. The sweat coils are sometimes infiltrated with cells, in other cases destroyed. The epidermis is unaffected. The granulomatous structure may be in the form of infiltration instead of nodule, but histologically the neoplasm is the same, commencing round the vessels and glandular structures. The macular eruption of nerve leprosy, **Neuroleprides** of Unna, are not the same as the above. Some observers say there are no bacilli in them, others admit that there are a few, but in a case of Abraham's with rings, Pernet† found abundance of bacilli. At all events they are only indirectly through the nerve lesions the product of leprosy, and they may arrest the bacilli in the blood stream, but these tend to disappear in the older macules; according to Unna, there are older forms of embolic neuro-leprides, which show a transition to subcutaneous and cutaneous nodules.

The mucous membranes are affected in the same way as the skin, and

* The claims of Campana and other workers that they have cultivated the bacillus are not accepted.

† *Brit. Jour. Derm.*, vol. xii. (1900), p. 450.

bacilli are present in large numbers, the tongue, epiglottis, larynx, and nares being most affected.

In the enlarged nerves, especially the ulnar and peroneal, bacilli are abundant, and can best be found in longitudinal sections. The changes are both parenchymatous and interstitial, but it is disputed as to whether the bacilli are intra- or extra-cellular; probably they are both.

The viscera most affected are the liver and spleen, which are enlarged and contain vast numbers of bacilli. Amyloid changes are often present in these organs and in the kidneys, and large white and granular kidneys are common, but nodules are rare, though bacilli may be found. When the lungs are affected by leprosy alone a slow sclerosis is said to occur and no caseation; but tubercle bacilli are often conjoined toward the end, and then caseation and other tuberculous changes occur.

There are no distinctive changes in the nervous system, but degeneration of the cutaneous filaments of the peripheral nerves is common.

The eye changes are all due to the bacilli, which have been found in numerous colonies when they were absent in other parts of the body (Lie).

Diagnosis.—No mistake in any of the forms can well arise when the disease is fully developed. The early symptoms of the nodular forms may be mistaken for acute rheumatism, for beriberi, and for ague, and when the patient is in a malarial district the diagnosis may be very difficult, but if he is in a leprous district, the extreme drowsiness, the vertigo along with epistaxis, should lead to a suspicion of the state of things, especially if he has associated with other lepers.

Difficulties arise from the disease developing sometimes insidiously, without any prodromal symptoms, the skin manifestations being the first signs. These, moreover, may be very limited in extent, slow in evolution, perhaps a single nodule or patch of infiltration, without any apparent cause remaining with very little change for weeks or months, and there may or may not be loss of sensibility, although in the majority there is some sensory disturbance which may need careful investigation for its detection. In doubtful cases the bacilli should be looked for, though it must be admitted that in some cases indisputable on clinical grounds, very good observers have sometimes failed to find the bacillus, but the mode of investigation is of the highest importance.

The early eruption of leprosy may resemble some cases of *erythema exudativum*, but the absence of hyperesthesia or anesthesia in the latter, and the febrile symptoms being only slight or absent, are distinguishing features. Moreover, erythema

papules are, as a rule, not so large, and when they spread, clear up in the center; on the other hand, leprous erythema may form in rings from the first, but they do not spread at the margin and involute in the center, but remain unchanged for some days or weeks; the ring is broad in comparison to the clear center, the color is a deep crimson-lake hue.

They are less often seen on the face than lepra spots, and the whole disease runs a more acute course, leaving at the most transitory, bruise-like stains, while the eruption of lepra is very persistent, fading to orange-colored spots, remaining slightly elevated and lasting for months.

In *syphilitic roseola* the patches are small, not over three-quarters of an inch in diameter, very little raised, and the other symptoms of syphilis would certainly be present.

The nodules may resemble those of *syphilis*, and on the whole that is the disease for which leprosy is most likely to be mistaken before the symptoms are fully developed.

Leprous nodules have their special seat of predilection; those of syphilis are indiscriminate, and may come where leprous nodules never, or rarely, appear. Moreover, the nodules of syphilis are not grouped, have a characteristically depressed center after a time, and run a more acute course, whether they become absorbed or break down. I have twice seen leprosy and syphilis combined; the presence of anesthesia helped to distinguish in one case, while in the other the facial aspect of lepra was characteristic. Some sensory disturbance is usually present.

From *lupus vulgaris* nodules, those of leprosy are distinguished by being symmetrically disposed to some extent and by their being more persistent.

In mixed lepra, if ulceration of the palate and destruction of nasal cartilages were present, *syphilis* would be suggested; but by this time anesthesia would have set in, which would practically exclude syphilis, and then further investigation would reveal that the patient had other symptoms of leprosy.

The maculo-anesthetic form has been mistaken for syringomyelia; but though the sensory symptoms of the presence of tactile sensibility and the absence of sensibility to pain, heat, and cold were similar, the patient had paralysis of the orbicularis palpebrarum, thickening of the ulnar nerves, and had lived in

Tonkin. Characteristic skin lesions, too, are rarely absent. Great care is required, in rare instances, when the nerve symptoms are unilateral. See also Morvan's Disease.

Although the symptoms of syringomyelia and its variant, Morvan's disease, may be observed in a few cases of leprosy, Zambaco's views that they are merely atavistic forms of leprosy justly meet with scant acceptance, and are further discounted from his saying the same of ainhum, diffuse and circumscribed sclerodermia, progressive muscular atrophy, and Raynaud's disease.

Prognosis.—The disease is almost invariably fatal, and even though existence is prolonged for many years, it is at best a miserable one.

Recovery occasionally takes place in temperate climates, both in the nodular and maculo-anesthetic form; but the chance is better for the nerve form, though there is more or less permanent disablement.

The duration varies greatly, according to the form of the leprosy; the nodular is soonest fatal, the mixed next, and the maculo-anesthetic least. The average duration of the first is eight years, of the second ten years, and of the third fifteen. Mental depression, and the patient being young, are unfavorable circumstances in all forms.

A well-developed case of nodular leprosy of three years' standing left the West Indies and came under my care in 1888. He improved considerably up to 1897, when he began to have irido-cyclitis; this led to blindness in two years. In 1898 nodulation and infiltration of the face, which had cleared up, began to recur, and at the end of 1899 was very marked; even then he said in his general health he never felt better in his life, and it had not failed in August, 1902. For the first five years from 1888 he had no febrile exacerbations, the first one being determined by a tuberculin injection of minimal quantity.

In nodular lepra unfavorable symptoms are the febrile exacerbations being frequent, the air passages being involved, and the internal organs extensively implicated, in which case the febrile symptoms are more severe and the urea excretion greater, while extensive ulceration and the supervention of lardaceous disease are signs of especially bad import.

Favorable elements are: the patient coming under treatment

early, removal to a temperate climate, the absence of serious complications, the nodules shrinking, and the febrile exacerbations occurring at long intervals. Diffuse infiltration is better than many nodules, the progress being slower, the fever lower, and the case more amenable to treatment. In maculo-anesthetic lepra, the disease is almost as certainly fatal in the long run, but the end is much further off, and if seen early, or the nerve implication is not extensive, and there are no serious complications, the disease * may be arrested, and even improvement in the sensory symptoms, with return of sweat secretion, be obtained; eventually, however, the eruption spreads, the bones disintegrate and lead to mutilations with all the other troubles already described.

In the mixed form the patient is liable to the accidents of both forms, but, on the whole, the disease is rather slower than the purely nodular cases in its progress, but ulceration of the soft palate is especially liable to occur in this form, and add to the other troubles.

Treatment.—This, unfortunately, has hitherto only been palliative or preventive, the number of so-called specifics bearing testimony to the incurability of the disease. Evidence is, however, accumulating that we may hope for better results in the future, and even now in temperate climates the duration of the disease may be considerably extended beyond previous averages.

Most authorities recommend a change to a temperate climate, and certainly patients should be removed from districts where the disease is endemic. There can be but little doubt, however, that cold and variable climates have an unfavorable influence, by increasing the liability to chills.

When the febrile exacerbation is present, full doses of quinine should be given, five grains of the sulphate or hydrochlorate every four hours combined with an effervescing potash mixture. The strength should be carefully supported by highly nourishing diet, and hot baths are especially useful. Iodid of potassium is contra-indicated at this stage; according to Wolff, it makes

* Mr. Hutchinson showed a case at the International Congress of 1881 of a woman who had had this form of leprosy thirty years before, and was quite well except that she had still paralysis of the arms and anesthesia. He says that many of these cured cases end in tuberculosis.

the fever violent, the nodules ulcerate, and fresh nodules appear with presence of bacilli in the blood. In one case within my knowledge it produced purpura. Cod-liver oil, after the febrile symptoms have subsided, is beneficial. It is an exploded error that there is any disadvantage in healing the sores as soon as possible, and they should be treated on general antiseptic principles; iodoform and wet boracic acid lint, *e. g.*, are good applications, but when very extensive, finely carded oakum over a simple dressing is cheap and efficient, and prevents the fetor which too often poisons the air of asylums (Hillis).

Arning recommended salicylate of soda, from seven to fifteen grains three times a day. I have given it in two cases during periods of inactivity, but was unable to observe benefit from it, but it may be more useful in the more active disease of tropical climates or in the febrile exacerbation stage; and, indeed, Barnes, of the British Guiana Leper Asylum, says it acts like a charm in leprotic fever. Its analogue, salicin, might be substituted at this stage, as it can be taken in twenty- or thirty-grain doses or more, and seldom upsets the patient. Leitz has also recommended the administration of salol.

Of the many older so-called specifics recommended, only two * have to some extent stood the test of long experience—Chaulmoogra oil and Gurjun oil from dipterocarpus lævis. These oils are taken internally and rubbed in externally; both are very nauseous, and are best given in emulsion or capsules, beginning with small doses. The Chaulmoogra oil should be begun in doses of three minims, or one capsule, three times a day after meals, and gradually increased up to the limits of the patient's endurance, experience having shown that the result is far more satisfactory when large quantities, such as one hundred drops or more a day, can be taken, but it is seldom that more than a dram a day, and often less, can be tolerated, nausea, vomiting, and diarrhea ensuing, if the limit of the individual is exceeded. According to Oro Mario, the number of bacilli diminish under its use. Gynocardic acid has been

* "Kauti" was a celebrated secret cure by a Hindoo named Bhau Daji. It is an oil derived from a plant which he pointed out to a relative of Mr. Stanley Boyd, who informs me that its name is known as hydnocarpus imbricans. It somewhat resembles Chaulmoogra oil, which Desprez and Prain state is also from a hydnocarpus.

recommended in doses beginning at half a grain, and gradually increasing it up to forty-five grains three times a day. The oil also should be well rubbed in, in the form of an ointment, consisting of equal parts of the oil and lard; the friction should be thorough and prolonged, where possible for two hours a day, previously cleaning off the old oil with fuller's earth, or by the aid of a warm bath. I have seen one case of the mixed form in a man, æt. thirty-five, in which a perfect cure resulted apparently from taking Chaulmoogra oil in enormous doses. The disease was contracted in Paraguay, had existed five years, and was at its worst one and a half years previously. He began with small doses of Chaulmoogra oil, but could not tolerate much until he went up into the mountains. There he reached two hundred minims of oil per diem, and immediately began to improve; ultimately he reached five hundred in a day, and all symptoms absolutely disappeared except small areas of anesthesia on the upper and lower limbs.

Tourtoulis Bey * injected Chaulmoogra oil subcutaneously, five grams a day. There was marked improvement after fifty injections. Subsequently the patient underwent 584 injections, spread over six years, and was considered to be cured. On the other hand, Miquel says that the injections are painful and sometimes provoke local reaction, and Du Castel and Hallopeau say it may produce fat embolisms, so it must not be used indiscriminately, but all agree that the leprous manifestations improve under it.

Strychnia or nux vomica may be advantageously combined with Chaulmoogra, and assists in enabling the patient to tolerate it. Piffard and others have a high opinion of strychnia by itself as a remedy. When Gurjun oil is employed—and it is spoken of most highly by those who have used it in the tropics—it is given internally, in an emulsion consisting of lime-water three parts and Gurjun oil one part, half an ounce being given twice a day; at the same time, a liniment of equal parts of the oil and lime-water is rubbed in, in the same way as the Chaulmoogra. I have found that, in this climate, the emulsion cannot be made by this formula, the oil being too solid. For the mixture it was found best to rub it up with powdered gum arabic and water; but English patients could not take more than a dram

* Abs. *Brit. Med. Jour. Supp.*, November 11, 1899.

a day, and that only by raising it very gradually from a five-minim dose. The liniment can be made with olive oil instead of lime-water. In the writer's hands the Chaulmoogra oil appeared to be more useful than Gurjun, but in the tropics Gurjun is more valued. I have found simple oils quite as useful for a liniment, and greasy applications always seem grateful to the leper. Besides direct medication, frequent baths, especially Turkish, are to be used, and strict attention to general hygiene should be paid. A very liberal dietary should be ordered, and Hutchinson advises a good allowance of a generous wine. Sulphur baths are strongly recommended by some, and since scabies is a very common complication in the tropics, sulphur has a double advantage. The patient should be well and suitably clad according to the climate, and chills carefully avoided, as they frequently seem to determine a fresh exacerbation. Other remedies have had advocates lately. Unna claims to have cured a case with sulpho-ichthyolate of soda or ammonium, combined with the use of external reducing agents. The soda salt has entirely failed in my hands in two cases. In a boy of ten, in an early stage, five-grain doses produced anorexia, nausea, and vomiting, and an older nodulated case could not get beyond eight grains three times a day. There was no improvement in the leprous symptoms.

Tuberculin excited great hopes for a time, on account of the marked reactions produced by it in lepers; subsequent experience has shown that it is not only not of permanent benefit, but that it is dangerous,* as it sets free the bacilli instead of destroying them. In a nodulated case under me, which had been free from febrile attacks for three years, two milligrams excited an attack of leprous fever of a remittent type which lasted three weeks, and a copious outbreak of fresh nodules ensued. They disappeared again with frictions of Gurjun oil liniment, and ultimately he was no worse, perhaps had a little less infiltration, but it was too dangerous an experiment to repeat.

Coley's Fluid (the toxins of erysipelas and bacillus prodigiosus) has also been given by injection with no good effect.

Carrasquilla of Bogota claimed to have had good results by injecting serum from a horse into which serum from leprous

* See a summary of the effects of tuberculin in leprosy in a leader in the *Lancet*, April 16, 1892.

blood had been injected. The results have been disappointing in the hands of others, there having been only transitory improvement, and even this has been ascribed to the reaction which can be obtained from products obtainable from normal serum. This, Kermogant points out, produces temporary involution of some malignant growths. There is no doubt, however, that in some cases diminution of the infiltration has occurred from the so-called leprous serum—*e. g.*, Buzzi's case—but it has not lasted and the injections are not free from danger.

Mercurial Injections. In the *Lancet* of August 8, 1896, I published the results of *intramuscular* injections of perchlorid of mercury,* one-quarter of a grain in twenty minims being injected into the buttock once or twice a week. The effect was most striking in removing the infiltration and improving the general state of the patient in the case related. The injections were continued for over two years once a week without any salivation or ill-effects, and three years after the commencement of the treatment the improvement was maintained. Other cases similarly treated have improved almost as much, but in some of them there has been a recurrence of nodules some months after discontinuing the treatment. The perchlorid gives pain at the time of injection and leaves an induration, at first tender, for some time afterwards; latterly, therefore, I have used the sozoiodolate of mercury in the same dose, dissolved by adding an equal weight of iodid of sodium. This solution is not nearly so painful either at the time or afterwards. It is important to plunge the needle well into the buttock, as subcutaneous injections are much more painful and liable to produce sloughing. At first I was in hopes that the mercury acted by destroying the bacilli, but the recurrence of nodules in quite new situations suggests that the infiltration is merely absorbed, and that some at least of the bacilli get free. It ought to be possible to attack some of these free bacilli either by salicin, which breaks up into salicylic and carbolic acids in the blood, or by the simultaneous administration of Chaulmoogra oil. Latterly, also, I have thought there was some advantage in carrying on the injections for three months, then waiting three

* Haslund of Copenhagen has also used independently these injections with benefit.

months and resuming injections. As in syphilis, it may take a long time to discover the best method of getting permanent results by these injections, and in that disease also cure cannot be promised by specifics, though their good effect is undeniable. Administration of mercury by the mouth does not produce equivalent effects; at all events, no other known treatment produces such rapid improvement in the appearance and general well-being of the patient, and it does not interfere with any other measures deemed advisable for his welfare. As might be anticipated, the results are not so striking in the nerve form, though improvement does result if the cases are of not too long standing. The leprotic eye affections have not been influenced by it in three cases in which I have tried it, even while other lesions were improved. Since the above was written I have had two cases in which the disease is apparently kept in abeyance by intermittent injections; and the treatment has been found advantageous by other observers, especially Neish of Jamaica and Lie, while others have failed to get any good results.

Locally.—Friction with Chaulmoogra, Gurjun, or even olive oil, is always a useful measure, and appears to facilitate the absorption of nodules. Unna claims to get good results by inunction of chrysarobin and ichthyol eight parts, salicylic acid two parts, vaselin one hundred parts, using pyrogallic acid instead of chrysarobin on the face. With this and ichthyol internally he claimed to have cured a case, but the patient died in a miserable condition a year later in Brazil. The fact is, friction with any greasy substance may produce temporary improvement. De Brun of Beyrout produced marked improvement with ichthyol internally for some months, the quantity reached ten grams a day. In the anesthetic form nerve-stretching and nerve-splitting have been found useful in restoring sensibility, muscular power, and healing ulcers, and some permanent improvement, also relief from the shooting pains so common in this form. Antipyrin gr. v. and phenacetin internally are worth trying for the shooting pains. Perforating ulcers from lepra can be treated as successfully as from other causes. (*Vide* separate article, p. 705.)

As *preventive* measures, segregation is the only effective plan, and it is probable that the disease was stamped out of England

and the greater part of Europe by this means, and great diminution in the number of lepers has ensued in Norway since its adoption. Kanthack, Collins, etc., dispute this, and ascribe it to improved hygiene generally asserting that diminution of leprosy in Norway began before measures of segregation were adopted, and that segregation was not strictly carried out in that country. The undoubted fact that people who have prolonged intimacy with lepers are exceedingly likely to contract the disease is much in favor of segregation, and the balance of evidence and opinion of the highest authorities is in favor of it. Hansen, who has had the best opportunities for investigating the subject, is a convinced contagionist and advocate for segregation. Those who have to dress the sores of lepers should be very careful if they have scratches or abrasions, and not neglect carbolic acid or corrosive sublimate ablutions afterwards.

RHINOSCLEROMA.*

Definition.—A granulation new growth of almost stony hardness, affecting the anterior nares and adjacent parts.

This disease was first described by Hebra and Kaposi in 1870 from seven cases, and their account was extended by the experience of other cases in their classical work, from which the following account is taken, there having been only three instances † in England out of about two hundred known cases.

* *Literature.*—Hebra's "Skin Diseases," vol. iv. p. 1. Monograph by Celso Pellizzari (Florence, 1883). Good analysis in *Ann. de Derm. et de Syph.*, vol. iv. (1883), p. 549; in volume for 1890, p. 173, is a full analysis of a good paper by Wolkowitsch. A paper by A. Castex, in *Jour. Malad. Cutanées*, vol. iv. (1892), p. 161, gives a *résumé* and bibliography to date. Ducrey, 1893, has complete illustrated monograph on four Italian cases. Abs. in *Annales de Derm.*, vol. v. (1894) p. 131. Kaposi's Hand Atlas, Plates CCLXXXIX. and CCXC., *et seq.*

† Semon's and Payne's case, a South American Spaniard, *Path. Trans.*, vol. xxxvi., 1885, colored plates and histology. This is the same case which had been in Paris, and was histologically examined by Cornil, *Prog. Méd.*, tom. xi. (1883), p. 587. I saw this case both at St. Thomas' Hospital and at the Pathological Society. He was a native of Gautemala, æt. eighteen, and the disease had been present four years. Morell Mackenzie, in *Brit. Med. Jour.* for March 21, 1885, gave a further account of this case, and in his work on "Diseases of the Throat and Nose" he gives a summary from forty cases. W. Anderson showed a

(Up to 1895 Kaposi had seen fifty cases.) The disease occurs chiefly in the Austrian Empire and Southwest Russia. A few other cases have been observed in Italy, Spain, Switzerland, Belgium, and Sweden, at San Salvador, and other parts of Central America, in Brazil, where it is said to be not very rare, and a case from Egypt has been reported by S. Davies. Vidal had a case from Buenos Ayres, and Besnier's and the other Parisian cases were also foreigners. Kiegan relates four cases in Hindoos in the Indore Hospital. Indigenous North American cases have been reported by Bulkley, Jackson, Klotz, Wende,* etc.

Symptoms.—The disease generally commences in the mucous membrane of the anterior nares and the adjoining skin. Wolkowitsch analyzed 85 cases, and found the regions attacked were: Nasal fossæ, 81; exterior of nose, 74; pharynx, 57; upper lip, 46; larynx, 19; palatine arch and velum, 17; upper alveolar border, 16; trachea, 5; lacrymal sac, 5; tongue, 4; lower lip, 2; ear, 1. Pick and Kaposi have also observed it in the auditory canals.

The lesions consist of flattish, isolated, or coalescent nodules or raised plaques, imbedded in the cutis vera, or deeper layers of the mucous membrane, and sharply defined from the normal skin. The growth is peculiarly hard to the touch, though not entirely devoid of elasticity, smooth, glossy, and either of normal color veined with dilated vessels, or of a uniformly bright or dark brownish-red color, quite devoid of hair or glands. The epidermis covering it is tense and easily cracked, forming rhagades at the natural folds, and from these exude a viscid secretion, which dries into yellowish adherent scabs. It is not spontaneously painful, but aches severely after firm pressure.

It commences quite painlessly, as a simple induration, on the inside of the alæ nasi, the mucous membrane of the septum or from the upper lip, grows slowly, but with a tendency to spread,

case of a boy, æt. thirteen, at the Dermatological Society in 1890. It had recurred five years after removal. The boy was born in England, but looked as if he were of foreign extraction.

* Jackson, *Amer. Jour. Cut. Dis.*, vol. xi. (1893), p. 381, with good colored plate. Wende, *loc. cit.*, vol. xiv. (1896), p. 90, was a native-born American boy. Jackson's was a Hungarian woman. Klotz's a German woman who always responded to specific treatment.

but never to spontaneous involution, and it may last for years without any change except superficial excoriation. At a late stage a viscid exudation occurs, and dries into a yellow crust. If any attempt at removal is made, it recurs comparatively rapidly, but is always a purely local disease, not affecting the health in any way except from its mechanical obstruction of the nostrils, which may be quite occluded when it is fully developed, and dangerous symptoms may arise from obstruction of the pharynx or larynx. At the same time it widens and flattens the nose, making the front part very tense and hard, while it may gradually implicate the whole thickness of the upper lip; and in Salzer's case spread even to the periosteum and bone itself of the superior maxilla.

Variations.—In one case it began on the velum and hard palate, in another as a hard polypoid tumor from the mucous membrane of the nose. There is also, often, absorption of the septum nasi from pressure, once perforation of the hard palate, but not from tumor, and once perforation of the skull into the brain (Kaposi); there has also been cicatricial-like sclerosis, but with very little tendency to tumor formation, in the pharynx, palate, and other parts. It is said never to break down except from injudicious treatment, but Zeissl's * case did; superficial ulceration when it is in mucous membranes may occur. Intercurrent erysipelas and threatened suffocation are the chief dangers, otherwise the disease may go on for fifteen or twenty years, and a case lasting twenty-seven years is on record. Lubliner records a case of spontaneous disapparance after typhus, and Lutz a doubtful one after typhoid. Klotz's case was improved for some months by scarlatina.

Etiology.—Both sexes are almost equally liable, and the ages hitherto have been from nine to forty. In Robertson's cases two sisters were attacked. The subjects are from the very poor, but are in good health. Beyond this nothing is known as to causation, but its narrow geographical limits suggest some kind of endemic influence.

Pathology.—On the whole these investigators regard the infiltration as *sui generis*, whose nearest relations are with granulation tumors, such as are seen in lupus, tubercle, syphilis, and

* Zeissl's "Syphilis," Plate XXIV. Lang had a case which simulated an ulcerating carcinoma.

leprosy. Noyes and Unna are inclined to the view that the growth is an inflammatory product consequent on the blocking of the lymphatics by the bacilli.

Anatomy.—The anatomy has been investigated by Kaposi, Mikulicz, Cornil, Payne, Róna, Marschalko, and others, with general agreement. The chief change is in the corium, in which the papillæ are elongated, and there is a dense granulation-like cell infiltration, with, in some parts, epithelial cells also, but not true giant cells, though Cornil describes large round cells with one or several nuclei; these are the same as described by Mibelli, confirmed by Noyes, and are of two kinds—so-called hyaline and colloid cells. The latter Noyes traced in various stages from infiltration round cells; bacilli in preponderating numbers are found in both kinds, but most in the watery cells from which the colloid cells are derived. Mibelli, however, ascribes these cells not to degeneration of the cell, but that their protoplasm has been replaced by the glea of the rhinoscleroma bacillus. Pawlowsky takes the same view. There is not much stroma as a rule, but in parts there is a very dense fibrous tissue. The epidermis is generally not much altered, but Payne and Mikulicz describe considerable branched down-growth of the interpapillary processes, and Payne also found in the epidermis nests very like those of epithelioma, but containing an imprisoned hair. Frisch, confirmed by Cornil and Alvarez, Paltauf, Payne, etc., found characteristic * bacilli, short, thick, ovoid, and capsulated, and staining only at the ends; these occur either in free groups or in cells, in places where the epithelioid cells are most abundant. They closely resemble the pneumococci of Friedländer, but are considered to be quite distinct by Dittrich, Cornil, Alvarez, Rydygier, Ducrey, Paltauf, etc., while others consider them identical. Friedländer's bacillus produces more rapid fermentation in a one per cent. solution of grape sugar, will grow in an acid medium, and will coagulate milk—all points of difference from Frisch's bacilli.

Some recent observers, such as Secchi and Ducrey, do not consider that the bacilli of Frisch are the pathogenetic agents, while Róna and Marschalko do think so. The latter has made very careful observations, and concludes that the hyaline and colloid cells are degenerated plasma cells and are not specific to rhinoscleroma, as hitherto supposed, and are met

* They are best demonstrated by prolonged staining (twenty-four hours or more) with five per cent. solution of methyl or gentian violet in saturated aniline water, and decolorization with Gram's iodin solution. Mibelli prefers Grenacher's alum carmine. The sections are placed in a four per cent. solution in hot water, and allowed to remain an hour or more—twenty-four hours are not injurious. They are then washed in water, treated with alcohol in the usual way, and mounted in dammar. The bacilli could be easily found in infiltration cells, but only in those which had undergone some change. Their size is 2 to 2.5 μ long and .5 μ thick, usually grouped.

with in other processes; but a large proportion of plasma cells are transformed into rhinoscleroma tissue by regressive degeneration. The only specific elements besides the bacilli are the cells of Mikulicz, which are connective tissue cells degenerated by the action of the bacilli, of which they contain enormous numbers in gleæ. The cells increase in size to bursting point and then scatter the bacilli through the tissues. The cells then perish, and are replaced by the hard collagenous tissue characteristic of the disease.

Diagnosis.—The stony hardness, slow painless growth without disintegration, and its predilection for the anterior nares, are pretty characteristic from the dermatologist's point of view, and when it commences in the pharynx or larynx the case is not likely to come to him. In some of these respects it is imitated by syphilitic nodules, keloid, and epithelioma.

Syphilitic infiltration offers trouble only at first, as it soon shows signs of disintegration, and any doubt would be resolved by the administration of specifics, in most cases, though in some, such as one of Hebra's and that of Klotz, temporary improvement occurred under mercury.

Keloid, with dilated vessels over it, would be very like, but is rarely met with about the nose; a history of a previous scar would help, but microscopic investigations of an excised portion might be necessary for certainty.

Epithelioma is extremely rare on the upper lip, and being on the border of the mucous membrane and the skin would ulcerate comparatively early; before this the pearly, vesicular-looking nodules on the border of an epithelioma would assist to a right conclusion. Some sarcomas are very like it at first until they begin to break down.

Treatment.—Permanent removal has never yet been accomplished, the disease speedily recurring after excision, probably because it is seldom seen early enough to be able to get beyond the disease. It is remarkable that it does not cut nearly so hard as it feels to the touch. Attempts to keep the nostrils permeable have been made by boring through the growth with caustic potash, or removal with the sharp spoon, but only temporary relief has been afforded, though the perforations may be kept open by antiseptic tampons. As the patients live long with comparatively little discomfort it is probably better to leave them alone, as far as operative interference is concerned, except that sounds may have to be used to keep open the air passage

in the larynx. In one case Lang obtained promising results with a salicylic acid treatment, inside and out, as follows: A one per cent. solution of salicylic acid was injected into the sclerosed parts once a day, later a two per cent. salicylate of soda solution was used. Metallic tubes covered with salicylic acid plaster were introduced into the nostrils. Naso-pharyngeal douches of salicylate of soda were employed, an alcoholic solution of the acid applied, where the mucous membranes were affected, and salicylic acid snuff ordered; in fact, salicylic applications in every conceivable way; and internally, ten grains of the salicylate three times a day for two months. One and two per cent. solutions of carbolic acid were also used. Very great improvement ensued in all parts, the infiltration became softer and less conspicuous, and the patient was improving in every way, but he had to leave the hospital before he was quite cured. This treatment, therefore, deserves further trial. Corrosive sublimate or thiosinamin injections might be tried. Stoukovenkoff had fairly good results by injecting a from one to twelve per cent. solution of liquor Fowleri, which arrested the progress of the disease, and at the end of fifteen months (222 injections) the growth seemed to be disappearing. Arsenical injections are very painful. Vymola treated a case with success at Houl's suggestion, with rhinoscleroma toxin. There was a slight rise of temperature; the dose began at 1c.c., and was increased to 6c.c. In three months the thickening and infiltration had subsided.

EMBRYOGENIC GROWTHS.

Synonym.—Nevi.

Most continental authorities employ the term "nevi" for all forms of neoplasm of congenital origin which are present at birth, and many use it also for growths which, although due to developmental errors, may not have appeared for months or years after birth. Custom in England restricts nevi, unless a qualifying term is added, to blood-vascular growths. To avoid ambiguity, and since in its strict meaning a nevus should be present at birth, I here employ the term "embryogenic" for all

neoplasms which there are strong grounds for believing derive their origin from defects arising in fetal life.

These are: Some keloid fibroma, neuro-fibroma and neuroma, myoma, nævus pigmentosus, nævus vascularis, angioma serpiginosum, lymphangiectodes, lymphangioma tuberosum multiplex, epithelioma adenoides cysticum, adenoma sebaceum.

While the clinical differences of most of these growths generally enable them to be readily diagnosed, in some the nature of the growth can only be determined with the aid of the microscope.

KELOID.

Deriv.—χηλή, a claw.

Synonyms.—Cheloid; Alibert's keloid.

Definition.—A fibro-cellular, corium new growth, occurring after injuries to the cutis, and perhaps spontaneously.

This disease has no relation to Addison's keloid or morphea. The so-called true keloid is a very rare disease, one in two thousand according to Hebra and McCall Anderson, though some authors give a higher proportion.

From the time of Alibert, who first clearly described this disease, onwards, authors have spoken of a true and false, or spontaneous * and scar keloid,† while Dieberg has added the hypertrophic scar, Hawkins the verrucose cicatricial tumor, and Wilkes the syphilitic keloid. The first two are of the most practical importance, and even between these, as will be shown in the etiology and pathology, the distinction is probably more artificial than real, and is only provisionally retained here, for convenience of description.

Symptoms.—The typical keloid not obviously of scar origin is often single, and its most common position is on the trunk,

* Alibert's Atlas, Plates XXVIII. and XXIX., in the first edition, where it is called cancroide. The term cheloid is used for the same lesion, in the second edition.

† Author's Atlas, Plate LXXII. Hebra, Lief x., Plate V., Figs. 1 and 2. Hutchinson's "Illustration of Clinical Surgery," several plates. Morrow's Atlas, Plate LXIII., Fig. 1, in negro.

especially on the chest over the sternum (half of all cases), where it forms a firmly elastic tumor of cicatricial aspect, sharply defined, springing up abruptly from the healthy skin, and projecting from one-sixteenth to a quarter of an inch or more; its shape is very variable, oval or disclike, cylindrical or rodlike, and occasionally nodular, often rather narrow in the middle in the rod-shaped, and slightly depressed in the center in the disc form, which may be pedunculated; and the frequency with which it sends out clawlike processes,* mainly at each end, gained it its appellation. The surface is smooth, the epidermis tense, unless involution is occurring, and the color is white and shining, or pinkish or purplish from dilated vessels coursing over it. It is generally tender, and sometimes spontaneously painful, the patient complaining of pricking, burning, or itching, which is occasionally severe; on the other hand, all these symptoms are often absent, and the claim to distinguish true from false keloid by their presence cannot be maintained.

After attaining a certain size the tumor may remain stationary for an indefinite time, or progress very slowly, *e. g.*, Callender's case was observed for ten years, during which period it gradually enlarged, while Duckworth's case existed forty years, attaining to the size of a horse bean in sixteen years, while twenty years later it was two and a quarter by one and three-quarter inches. In a case of my own, a gentleman, æt. sixty-seven, who had numerous large scar keloids on the trunk and limbs, they dated from boyhood, fifty-three years before, coming on after boils, and some of them had grown very large, and were still enlarging. They itched and pricked at times, especially after alcohol. (*Vide* my Atlas).

Keloids may undergo involution, either partial or complete. Three of the tumors in the case just mentioned had disappeared completely, leaving the skin which contained them as a loose sac, and I have seen three instances of small scar keloids, which developed and declined under observation, taking three years in a syphilitic keloid in a young man, while in a woman of forty-five a keloid following injury had not quite gone in four years.

* Unna explains that this is due to extension taking place in the course of the larger vessels, "Histology," p. 841; and Wilson pointed out that they form to join the outlying nodules to the main body.

On the other hand, in Goodhart's case, which followed smallpox scars, and was well-nigh universal, large tumors involuted completely in a few months. Many other cases are on record, and Hutchinson thinks that involution is the rule in the keloid of young people, while in other subjects its disappearance is slow, or does not occur at all. In Erasmus Wilson's case the tumor varied in size according to the patient's health.

Variations.—The less common positions for supposed spontaneous keloid are the face, ears (especially the concha and lobule, symmetrical when due to earrings), both surfaces of the extremities, the back of the hand and foot, the external genitals, and in Minges' case it occurred in the urethra. When multiple,—and they may be numerous * if they are on the chest,—Kaposi says that they are arranged in rows parallel to the ribs; but this is certainly not always the case. In de Amicis' case, a woman, æt. twenty-seven, there were 318, most of them spontaneous, and arranged with very exact symmetry. They were hemispherical, from a pin's head to a pea in size. When small, they may be imbedded in the skin, and only perceptible to the touch. In Reiss' case, a girl of twelve, there were 210, symmetrical on the whole, but not in lines. There was no antecedent eruption. The de Amicis, Cazenave, Schwimmer, Kaposi, and Reiss cases form a special group, and are perhaps of congenital or nevoid origin, though late in development, and have more claim to be called "spontaneous" than any other form.

Keloids rarely ulcerate or take on a malignant character, but a case in which both these complications occurred is recorded by W. Anderson.† On the other hand, epithelioma in hypertrophic scar tissue is not so rare, especially if subjected to repeated irritation. (See Epithelioma.)

* De Amicis' case, "Comptes Rendus," Derm. Cong., Paris, 1889, with three colored plates, p. 93; and Vidal, p. 103. In a case of Schwimmer's, p. 568 of Ziemssen's "Handbook," there were 105. Original communication in *Viertelj. f. Derm. u. Syph.*, 1890, p. 225. W. Reiss, *Archiv f. Derm. u. Syph.*, vol. lvi. (1901), p. 323, with colored plates; very like de Amicis' case; copious references.

† *Lancet*, May 25, 1888, p. 1025—the woodcut is in the next number. Abraham also records a case of ulceration in a presumed keloid, but the diagnosis was open to doubt. *Brit. Jour. Derm.*, vol. x. (1898), p. 96.

Scar Keloids, of course, come anywhere, and, when due to the scars of an eruption like acne or smallpox, in any numbers, and do not differ in any other particulars, except their origin, from the spontaneous form. They spring from the scar, but are not always limited to it, often spreading slowly, like the others; on the other hand, the **hypertrophic scar** never spreads beyond the limit of the scar, and is simply a thickened cicatrix. Keloid is said to be particularly frequent in syphilitic scars, to be softer and more likely to involute in them than in others, but this is not established as a general rule. Verneuil, however, relates that in a case of syphilis, where keloids covered the whole body, they all disappeared under iodid of potassium. It would be easy, however, to show, from my own and general experience, that iodids do not usually make much impression on keloids in syphilitics. Bryant says that it is pigmented, but this is not especially frequent in my experience, and pigmentation follows the disappearance of non-syphilitic tumors sometimes, as in Goodhart's case.

Keloid *en plaque* has been described by Hutchinson and R. W. Taylor,* in which there is a circumscribed, hard, not well-defined plate imbedded deep in the cutis, and projecting very slightly or not at all, though it may adhere to the epidermis in parts, which is then very pale and smooth, but not glossy. In Taylor's case, the result of a bite, the surface was ridged, and it could be pinched up. There were also two pedunculated fibroma tumors. In one out of the three cases there was pain and itching at times. In Hutchinson's two cases there was no recurrence after removal.

In a patient of mine, a surgeon, who had lived in India, there was in the interscapular region a large plaque, not raised above the surface, the size of the hand, which was first observed two years before, and had increased in size. There had been no antecedent lesion of any kind. In the plaque the sebaceous orifices were very obvious, so that the skin looked like orange peel, but whiter than the normal skin, and when pinched up it was slightly thickened. There was no difference in sensibility. The microscope showed fibrous thickening and

* Taylor, "Molluscum Fibrosum and its Relation to Keloid," *Amer. Jour. Cut. Dis.*, vol. v. (1887), p. 168, quotes Hutchinson's cases from *Med. Times*, May 23, 1885.

condensation in the papillary layer, projecting above the level of the skin, while the central portion was depressed below the border and was atrophically cicatricial.

I saw a very peculiar case with Mr. Cursham Corner in a woman of sixty-seven. Twenty-eight years before, the disease began on the right breast, "like the sting of a wasp"; it was not very red, and in five years was only the size of a shilling; then another began on the left breast, and both increased together, and during the last year more rapidly. When seen each lesion formed a ring about five inches in diameter, the border varying from one-half to an inch or more. The patches as a whole were flat, thin, and indurated, and could be pinched up like a plaque in the skin one-eighth of an inch thick, quite cutaneous, and not at all adherent to the subjacent tissues. The patches itched and burned "dreadfully," and sometimes they smarted or she had cutting pains. On the right side there was a third oval patch three inches by two and a half, which had grown a third larger in eighteen months. It was flatly convex, thicker than the others, and nearly uniform, but near the center the skin was pale yellow and becoming cicatricial, and there were three large comedones upon it. As no histological examination could be made the diagnosis is open to dispute, but its hardness, slow growth, appearance, and symptoms agreed better with keloid than anything else.

Acne Keloid is a keloid tumor with its long axis transverse, which is seen sometimes on the nucha. It has tufts of hair imbedded in and projecting from it, as the neoplasm has grown up round groups of follicles which have escaped the destructive influence of the antecedent process, which is that of a suppurative folliculitis, and has been described by Kaposi under the name of **dermatitis papillaris capillitii** (which see). French authors have designated it acne keloid, which well fits the terminal part of the process. I saw a well-marked instance in a patient of my late colleague, Berkeley Hill, just in time to make the diagnosis before it was excised. Microscopical examination showed that it was composed of dense fibrous tissue.

In a patient of mine there was an analogous condition in the whiskers, where there was a plaque the size of a shilling formed of fibromatous papules with a hair stump in each; the history

showed that it started from a pus cocci eruption which began in the scalp. Balzer and Griffon * report a case of keloidal thickening of the scars left by an impetigo on the limbs, in which they found streptococci. A similar condition, following severe acne on the back, is not uncommon.

Etiology.—Sex appears to have no influence, though some authors state that keloid is more common in women. It may occur at any age; one case was congenital (Bryant), and it has been seen in a child of six months, and at all ages from this upwards; but it is rare in old age, and uncommon in puberty. It is said to be more common in some races, especially in negroes,† in whom it very frequently follows slight injuries, the tumors attaining enormous numbers and dimensions. There is some evidence ‡ also of heredity and family predisposition, and that there is a strong individual predisposition in some patients is obvious. According to Kahler, keloid is one of the characteristic symptoms of syringomyelia, but this is an exaggeration, to say the least. The researches of the Keloid Committee of the Clinical Society,§ of which I was a member, threw much doubt on the spontaneous origin of keloid, and though it could not be disproved in the face of such cases as those of de Amicis and Vidal, it is certainly much rarer than was formerly supposed. This much is, however, certain, that the so-called false or scar keloid may ensue on the site of very trifling lesions, *e. g.*, leech bites, acne scars, scars from herpes, and all kinds of pustular and vesicular eruptions, and even from contusions, frictions, or blisters in which there is no cicatrix; indeed, one of the most extensive cases I know of followed an attack of prickly heat ‖

* *Annales de Derm. et de Syph.*, vol. viii. (1897), p. 285.

† An extreme case with colored illustrations is published in *N. Y. Med. Jour.*, January 7, 1893.

‡ Hebra, vol. iii. p. 278; three sisters and the mother were affected. Wilson, Hutchinson, and Bryant also mention cases.

§ *Clin. Soc. Trans.*, vol. xiii., 1880, report on Dr. Goodhart's interesting case in the same volume, with plate; many of the facts above related are drawn from this report. See also Hutchinson, *Med. Times and Gaz.*, May 23, 1885; and *Archives*, vol. iv., 1894.

‖ Two cases of kelis by T. Longmore, *Med. Chir. Trans.*, vol. xlvi., 1863, illustrated. The disease affected the whole back in honeycomb bands, and there were also tumors on the chest and face. Hutchinson, *loc. cit.*, mentions several instances of keloid nodules developing as a sequence of severely pruritic eruptions. He quotes Morrant Baker's case.

in a soldier in India after the irritation had been present a month. It is evident, therefore, that the origin of many so-called false keloids may be overlooked, and they may erroneously be considered to be spontaneous. While the existence of spontaneous keloid is not disputed, it is evident that it is futile to try and draw distinctions between it and scar keloid.

Possibly the frequency of keloid on the sternum and mammæ may be accounted for in women, by the pressure and friction of the stays, and in men by the frequency with which that region is exposed to similar influence, *e. g.*, leaning against a desk, etc. I have observed scar keloid in association with the following diseases: morphea, fibroma, and multiple fatty tumors, and appearing on the site of acne and vaccination and revaccination scars. Several cases are on record of its occurrence in psoriasis without antecedent scarring (see that disease). In Anderson's case the keloids were quite white, and I have observed similar lesions on the back of a girl, but she knew nothing about their origin, and they were probably congenital.

Pathology.—All that we know of the pathology is that it is a connective tissue new growth, intermediate in character between a cicatrix and a sarcoma, commencing round the vessels, and ultimately compressing them and the other skin structures and forming a uniform collagenous mass. It is generally, if not always, connected with previous injury of the affected tissues, though the injury may be so slight as to be overlooked.

It is evident from the etiology that pus cocci lesions are particularly liable to be followed by keloid, and the fact that when once keloid is started in a scar, old scars long quiescent may become keloidal is suggestive of microbic origin for the keloid itself. Probably also hypertrophic scars only occur in wounds which have not been aseptic.

Anatomy.—Numerous observations on spontaneous keloid have been made by Langerhans,* Warren, Jr.,† Babes, and Denériaz;‡ and upon scar koloid by Kaposi, Neumann, Schutz, and myself.

Nos. 16 and 17, 1895, Catalogue of Skin Models, Coll. Surg., as an extreme example from urticaria. (See Urticaria Perstans Verrucosa, p. 162.)

* Virchow's "Arch. Dritte Folge," Bd. xl., p. 334, with good *résumé* of previous observations.

† "Sitzungsberichte, Akad. der Wissenschaften zu Wien." 1868, p. 413.

‡ "Thèse de la Faculté de Berne" (1887). A good detailed analysis in *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 573.

The first two observers found that in spontaneous keloid the tumor was imbedded deeply in the corium, and that the papillæ and rete cones over it were intact, and hence they argue that it is a spontaneous new growth in the corium. The tumor consisted of dense bundles of connective tissue, with the fibers running for the most part parallel to the long axis of the tumor and with the skin surface; here and there were some oblique bundles traversing the tumor; there were but few nuclei and spindle cells, and they were round the scanty vessels in the center of the tumor, but at the younger peripheral part both vessels and spindle cells were abundant. Warren also found the vessels affected far beyond the tumor, and these accounted for the recurrence of it after removal. Babes found that the papillæ and cones were absent; either the tumor he examined was really a scar keloid, or the papillæ or rete cones were obliterated by the pressure of the new growth. In scar keloid the papillæ

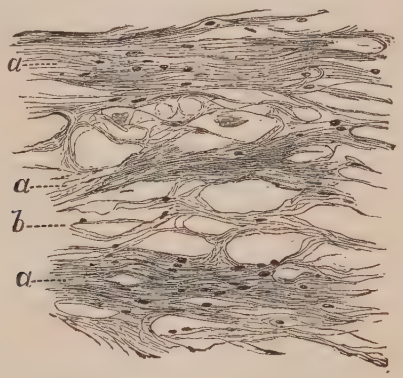


Fig. 53 —Recent scar keloid.

a, *a*, *a*, bundles of delicate fibrils of new connective tissue; *b*, nuclei scattered through the connective tissue bundles.

and rete cones are said to be absent, and Kaposi describes the same dense connective tissue, with few nuclei and vessels, as in the spontaneous form. Denériaz found giant cells in young keloid.

The tumor I examined * had certainly not begun to form more than three weeks, springing up upon each side of a linear cicatrix, and perhaps from the holes made by wire sutures. Sections were made parallel and transversely to the long axis of the tumor.

The papillæ and rete cones were absent over the greater part of the tumor, but not over all, their presence or absence depending upon the depth of the tumor in the corium. When they were absent over the tumor, they were notably enlarged immediately beyond it. The rete was rather thickened over the tumor, the palisade cells were somewhat irregular in shape, but were in an even line below. Between the rete and the tumor there was a thin layer of highly vascularized, loose, connective tissue,

* *Brit. Med. Jour.*, September 18, 1886, p. 544.

with the vessels dilated and the fibers running transversely to the long axis of the tumor. In transverse sections the tumor was seen to be bounded below by fibrous tissue, compressed into a pseudo-capsule imperfect at the sides. The tumor itself was freely traversed by branching dilated vessels which formed incomplete loculi, filled with cribriform tissue, but immediately round the vessel were fibers running parallel with it. In longitudinal sections the tumor was seen to consist of very delicate, sharply defined wavy fibrils or bundles of fibers, running parallel with the long axis of the tumor, and forming elongated meshes with the fusiform cells abundantly distributed between them; these cells were most abundant round, but not limited to, the vessels, which were less conspicuous than in the transverse sections. There were no signs of the appendages of the skin in the tumor, but outside it the hair follicles, sweat and sebaceous glands, were copiously infiltrated with round cells, obscuring or even breaking up their structure. The vessels also for a considerable distance, both beyond and below the tumor, reaching into the fat were also surrounded by round cells, were dilated, and their walls more or less infiltrated. In many of the sweat coils in the fat there was proliferation within, and infiltration between the acini.

The above observations show that the papillæ may be present over scar as well as over spontaneous keloid; and since Babes has shown that they may be absent in the spontaneous, and others have demonstrated their absence in the scar form, it is obvious that no argument, as to the origin of the tumor, can be founded on the presence or absence of the papillæ or rete cones. Leloir, however, still upholds Kaposi that this is a valid mode of distinction. *Vide* also Unna's "Histopathology." I agree, however, with Hutchinson, that clinical facts do not support his statement, "that the keloid scar never extends with fibrous processes into the healthy tissue, for, being due to the granulation, it is only present in the neighborhood." Schütz examined an old growth and found no elastic tissue and no cells.

Diagnosis.—An apparently spontaneous scarlike tumor, with lateral clawlike processes, forming over the sternum or neighborhood, is so distinctive that error is scarcely possible. Whether arising on a scar or not, keloid differs from a *thickened cicatrix* by its extension beyond the limits of the original scar. The diagnosis between spontaneous and *scar keloid* is scarcely worth making; it generally depends upon the patient's statement as to its origin. In multiple spontaneous keloid, like de Amicis' and Vidal's cases, symmetry in the arrangement of the tumors would be an important distinction.

Prognosis.—Spontaneous involution is not so rare as is usually stated; it is more likely to occur in the young, when the tumor is certainly of scar origin, and some say, in syphilitic scars, than when apparently idiopathic. As a rule, the tumor

is slowly progressive up to a certain point, and then remains stationary for an indefinite time.

Treatment.—This until lately was unsatisfactory; removal, however obtained, was almost invariably followed by return of the tumor. A very wide incision, so as to get beyond the diseased vessels, offers the best chance of success. Morphia or cocain injection is sometimes necessary when the tumor is very painful; belladonna or other anodynes locally applied may sometimes be desirable. Quinine is recommended also for the pains, but is of doubtful utility; phenacetin and antipyrin; absorbents, both external and internal, are useless, but Verneuil is much in favor of pressure, and has even cured cases with the elastic bandage. Care must be taken to effect the pressure without friction, or the growth will increase. Vidal has produced great improvement, and even disappearance of the tumors, by multiple, deep linear incisions, mincing it up so as to divide the vessels as thoroughly as possible. The operation has to be repeated many times, but from the first there was complete relief to the pains and irritation. Marie, however, after employing this procedure, observed an eruption of tumors of the same nature on points which had not been the seat of any wound or cicatrix. This led him to infer that a specific microbe had been introduced into the circulation by the scarifications. He therefore injected oil with twenty per cent. of creasote. Under this the tumor became swollen and pale, followed by severe pain, which lasted for some hours. At the end of two or three days the tumor became violaceous, a vesicle formed on the surface—it passed into the state of dry scar. Balzer and Mousseaux have had equal success with it. Tousey of New York, R. C. Newton, and Van Hoorn have had success by injecting a ten per cent. solution of thiosinamin either in alcohol, or better, as it is less painful, in equal parts of glycerin and water. I have had excellent results with this treatment.

In an extensive hypertrophic scar all round the lower jaw from a burn, thiosinamin injections,* twenty minims for a dose, distributed along the growth produced great improvement, the tumor flattening, becoming less vascular, and therefore paler.

* In a ten per cent. solution of thiosinamin some of it precipitates unless the solution is warmed just before injection. In the first case mentioned the treatment had not been completed at the time when this was written.

Another case with bands across the elbow-joint was quite cured. The *Röntgen rays* had an excellent effect in another such growth on the buttocks of a child of four from a scald. After fourteen exposures of a quarter of an hour each with three ampères, a vibrating interrupter, and the tube three inches away, inflammatory reaction set in, and when this had subsided the growth had shrunk to a quarter of its original prominence, was pale, and no longer produced inconvenience when the child sat down. Herschel Harris of Australia* also had a successful case after fifteen sittings, a soft tube with six ampères, and the tube five inches away. This latter method of soft tubes and six ampères runs the risk of excessive reaction. A second series of eighteen sittings completed the cure in Harris' case. My experience leads me to rely most on thiosinamin injections and Röntgen rays. Thyroid extract administration has been used with success, but I have had no experience of it. Where the growths are numerous it would find its best application.

Hardaway and Brocq advocate electrolysis by means of needles, this also evidently acting by occlusion of the vessels. The current should not be strong, and the needle not kept in long, or aggravation may ensue. If the positive pole, which coagulates better, is used, the needle must be of gold or iridoplatinum. I have had some success with this treatment and can recommend it. A surgical needle curved on the flat and attached to the negative pole I have found best; it is passed under the growth, and a current of three ampères used for twenty to thirty seconds for each insertion. It is necessarily painful.

* Abs. *Brit. Jour. Derm.*, vol. xiii. (1901) p. 279.

FIBROMA.*

Deriv.—Fibra, a fiber.

Synonyms.—Fibroma molluscum; Molluscum fibrosum; Molluscum simplex; Molluscum pendulum. Recklinghausen's disease, Neuro-fibroma.

Definition.—Soft tumors, due to hyperplasia of the connective tissue of the deeper layer of the corium, and of the subcutaneous tissues.

Fibroma Simplex. *Synonym.*—Acrochordon. Soft warts, "verrues charnues," are terms applied to the very common, from pin's-head to pea-sized, soft, pedunculated, vascular, and mole-like excrescences, which with their relics, in the shape of the empty hernialike sacs of skin, from which the contents have disappeared, are frequently seen upon the face, neck, and between the shoulders. and less frequently elsewhere in degenerated skins, chiefly of elderly people; but this is not the kind to which the term **Fibroma** is usually applied, and for which many dermatologists consider that **Neuro-fibroma,** or Recklinghausen's disease, would be more correct. This is a much rarer condition, only amounting to 9 in 16,863 American cases, and 1 in 10,000 in my own and McCall Anderson's cases, though this probably underestimates the frequency, as such cases very often go to the general surgeon.

There are three clinical varieties of this form: 1. Multiple

* *Literature.*—Author's Atlas, Plate LXXIII., Figs. 1 to 4. *Med. Chir. Trans.*, vol. xvi., Murray's and Pollock's cases, with colored plates and photos; ditto, vol. xxxvii. p. 155, V. Mott's cases, five cases with two portraits, small tumors. 1895 Cat. of Coll. Surgeons, Derm. Series, No. 270 to 283. Cat. of Guy's Hosp., skin models 497 to 501. *Clin. Soc. Trans.*, vol. xiii. p. 166. Sangster's case, engravings, histology, and many references; ditto, vol. vi p. 160, and vol. viii. p. 138, G. Fritsche's. Hutchinson's Lectures, "Rare Diseases of the Skin," p. 196. *Path. Soc. Cases*, vol. xvi., Wright's case; vol. xxx., Wood's case by R. Royes-Bell; vol. vi., Beale's. Recklinghausen: "Ueber die Multiplen Fibrome der Haut," Berlin, 1882—an able and important monograph. "Skin Diseases in India," Fox and Farquhar's Rep., App. VI., p. 155; nine cases by Wise of Dacca, etc. R. W. Taylor, "Molluscum Fibrosum, and its Relation to Acrochordon and Keloid," *Jour. Cut. and Gen.-Ur. Dis.*, vol. v. (1887), February and May. Walter Whitehead's case, *Brit. Med. Jour.*, vol. i. (1902), p. 757, illustrated.

small soft tumors, in which the surface of the skin is almost unchanged; 2. Small tumors like the first variety, with large pendulous tumors (fibroma pendulum); 3. Fibroma pendulum without other tumors.

Symptoms.—The tumors which constitute this affection are for the most part roundish or teat-shaped; they may be firm in parts, but are generally lax, so that the contents can, when pinched up, be rolled between the fingers. The skin over them is either tense or lax, usually smooth, and of normal color and surface, though sometimes bluish or pinkish from vascularity, while those with constricted base are of a brownish or brownish-red hue; a hair sometimes, or one or more comedones, conspicuous from their size, are to be seen in the center. In almost all other respects they present great variety. In number they may be from one or two up to hundreds and even thousands; in size they are from a pin's-head to an egg or an orange, or larger, but for the most part they do not exceed a walnut They are round, oval, pyriform, or polypoid; some are imbedded rather deeply under the skin, and are to be felt rather than seen; others are distinctly raised, but still sessile, and with a broad base like a mollusc; while others again have a pedicle, which becomes narrow eventually, and the tumor then hangs flabbily down, like a polypus. The tumors are quite painless, and give rise to no inconvenience except such as may arise from their position, unsightly appearance, or numbers.

The trunk is the part of the body where they are most constant, in front more than at the back, while there are only a few on the sides. Next in frequency is the head, especially the occiput, then the face and limbs, but they are seldom numerous on the latter, and they are rare on the palms and soles, where they become flattened by pressure. In a few cases the mucous membranes are involved,* especially the lips, gums, hard palate, and tongue.

While in a small proportion of the tumors the contents become absorbed and leave an empty sac, as a rule they gradually increase † in number and size, but do not shorten life in any way.

* In Walter J., U. C. H., there was a tumor on the buccal mucous membrane, and two on the side of the tongue.

† Fig. 4 of my Atlas; *loc. cit.*, from a late photograph of the case of Plate XVIII., Syd. Soc. Atlas, showing enormous increase in numbers.

Sometimes when they have been absorbed a pseudo-tumor is left, the skin projecting and forming a slightly translucent bluish-tinted tumor, which under pressure with the finger disappears below the surface like a soft air-bladder.*

Those tumors which are plexiform and obviously connected with nerve cords may be freely movable transversely, but very slightly in a vertical direction. They are especially found on the radial, saphenous, and crural nerves.†

Irregular patches of brown pigment are frequently seen scattered about the body surface between the tumors, and there is freckling also, and in one of my cases the whole face had become darker.

Besides this the skin is often coarse, thick, and pigmented; and hairy moles and vascular nevi and other skin deformities are common.

When the tumors, instead of growing in their usual slow, almost imperceptible manner, develop rapidly, the skin containing them becomes vascular, red, purplish, or mottled, then it excoriates, discharges, and ulcerates at the apex, and even sloughing may ensue; and when the growth is so rapid as to stretch and occlude the blood-vessels at the neck, which supply the tumor, the whole thing may slough off. Injuries such as friction, blows, etc., may produce similar results.

Cases of soft fibroma of the palm are recorded by Sydney Jones,‡ R. W. Smith, and Hutchinson (Jones' case was inclosed within the dilated tendon sheath); and a case of hard fibroma of the prepuce by H. Perrin.

Four remarkable cases under the title of **Fibroma fungoides** are related by Tilbury Fox,§ but they do not belong to the classes of tumors which are now under consideration. His sec-

Plates LXIV. and LXV. of Hutchinson's smaller Atlas show face and back of the same man at a late stage.

* Compare "multiple benign tumor like new growths," p. 649. And Prospelow's and Van Harlingen's so-called lymphangioma tuberosum multiplex cases were in all probability this form of fibroma.

† Numerous acquired neuro-fibromata of firm consistence and of a quite different character to those of Recklinghausen's disease are recorded in the interesting treatise on Neuroma by R. W. Smith, Syd. Soc. reprint, Fascic. xi. of Atlas of Illustrations of Pathology.

‡ Sydney Jones, *Path. Trans.* vol. xxxviii. (1887), p. 323, with references.

§ Tilbury Fox, p. 352, with illustrations of two of the cases.

ond case was probably a mycosis fungoides. His third was one of Murray's cases, and was possibly an early stage of the Sömmering-Behrend case * as far as the fingers are concerned. His fourth case suggested mycosis fungoides, but was said to be getting well under large doses of iodids.

A fibromatous growth round the hair follicles of the back † occurs in nodules isolated or aggregated into an infiltration in association with adenoma sebaceum, with which it is described. Simple fibromata and the empty sacs left after their absorption are also common in that disease.

The late stage of erythema diutinum elevatum has been reported as fibroma of the hands. Rare forms of fibromatous thickening of the skin are mentioned under Keloid.

In the cases with **pendulous tumors,** which are much rarer, in addition to the ordinary tumors, there are others much larger, consisting of huge masses sometimes weighing many pounds. These tumors are always very lax; they may have a broad attachment, but always much less than their diameter, and they hang down in pendulous masses, often in overlapping folds like a coachman's cape, and between these folds there is often a serous fetid discharge. They feel simply like masses of skin and fat, and the skin, besides being lax, is coarse, often pigmented, and covered with plugged sebaceous orifices.

The favorite sites for the origin of these tumors are the occipital region, the sides of the neck, the face, arms and axillæ, breasts, flanks, buttocks and thighs, and, according to Alibert, the eyebrows, abdomen, and labia.

Instances of these remarkable tumors, in association with ordinary fibroma, are related by Bell,‡ Alibert,§ Virchow,‖ Wright, Pollock, Royes-Bell, and many others, scattered through the medical journals.

An extraordinary case of the kind was brought to the Patho-

* Reproduced Hutchinson's smaller Atlas, Plates LX. and LXIII.; Author's Atlas, Plate LXXXVII., Fig. 2.

† *Med. Chir. Trans.*, vol. lvi. p. 234, with plate. They are reported as three cases of molluscum fibrosum in children.

‡ John Bell, "Principles of Surgery" (1808), vol. iii.

§ Alibert, "Monographie des Dermatoses," p. 796 (Paris, 1832), with plate. This is reproduced in Author's Atlas, Plate LXXIII., Fig. 3. Fig. 2 shows a huge tumor hanging from a man's side.

‖ Virchow, "Die Krankhaften Geschwülste," vol. i. p. 325.

logical Society by Treves. I had an opportunity of examining the patient there, and at a show, where he was exhibited as an "elephant man." The bulk of the disease was on the right side; there was enormous hypertrophy of the skin of the whole right arm, measuring twelve inches round the wrist and five round one of the fingers, a lax mass of pendulous skin, etc., depending from the right pectoral region. The right side of the face was enormously thickened, and in addition there were huge unsymmetrical exostoses on the forehead and occiput. There were also tumors affecting the right side of the gums and palate; on both legs, but chiefly the right, and over nearly the whole of the back and buttocks; the skin was immensely thickened, with irregular lobulated masses of confluent tumors, presenting the ordinary molluscous characters. The left arm and hand were small and well formed. The man was twenty-five years old, of stunted growth, and had a right talipes equinus, but was fairly intelligent. The disease was not perceived much at birth, but began to develop when five years old, and had gradually increased since; it was, of course, ascribed to maternal fright during pregnancy.

This condition may also occur without any of the small tumors, is more diffuse than the last class, and should then be called **Fibroma pendulum** instead of **Dermatolysis**,* or lax skin, as is usually done; it is often described as a separate disease, but it is only an extreme end of a chain, in which the earlier links are wanting. The following case, which came under my observation some years ago, is a good example of an acquired condition:

The patient was a storekeeper on a ship, æt. thirty-nine, and had fallen down the ship's hold fourteen years previously; a large abscess formed on the buttocks, and he was paraplegic for eight months; the abscess healed up, but continued to break out again at intervals. The buttocks began to increase in size two years after the accident, beginning at the sinus opening, and had gone on growing ever since; the leg began to enlarge ten

* Valentine Mott called these tumors Pachydermatocele, but this term has also been used for elephantiasis Arabum. Ketley reports a "flounce" case of the buttocks as "chalodermia": *Archiv f. Derm. u. Syph.*, vol. lvi. (1901), p. 108, illustrated; and there is an extreme case illustrated in "La nouvelle Iconographie de la Salpêtrière" (1902), p. 216.

years after the accident. Enormous pendulous folds of skin and subcutaneous tissue overlapping like flounces, depended from the twelfth rib to about halfway down the thighs, forming huge rolls of lax tissue, which were freely movable in any direction, and always took the most dependent position; there was a similar condition of the tissues of the right leg below the knee. The skin over the tumors was healthy-looking, but more pigmented than the rest of the body, and sensation was unaltered. The man was of short stature, but intelligent, and his general health was good, except that he had shooting pains in the right leg, and in various parts of the tumor. There were no ordinary fibroma tumors, but from time to time small tumors, the size of a bean, appeared in the abdominal wall; the skin over them was reddened, and they did not burst externally, but, when he squeezed them, they ruptured internally, and disappeared at once. Sensibility was not diminished over the tumor as it is in some cases.

In another, a somewhat similar condition of hyperplasia of the subcutaneous tissue, but less developed, and not so lax, was limited to the palms, soles, sides of neck, nose, and tonsils, in the last part necessitating excision. This condition supervened after scarlet fever, but there was no evidence of albuminuria * either past or present. These cases, it is to be noticed, came on later in life, but differ only in their origin from the others which begin in early childhood, such as Valentine Mott's or Fritsche's cases. J. Cowan † describes two cases of hypertrophic folds of the scalp in idiots. Also Cazenave's Atlas, Plate XXXVII.

There are also congenital cases where there is loose attachment of the skin without hypertrophy, and it is to these that the term **Dermatolysis,** should be restricted. In 1657, a Spaniard,‡ Georgius Albes, is reported to have been able to draw the skin of the right pectoral region to the left ear, or the

* Shown at Clin. Soc. by Balance and Hadden, January 25, 1885.

† *Journal of Mental Science*, October, 1893, p. 539, with plate.

‡ Related in Job A. Meek'ren's *Observationes Medico-Chirurgicæ* (Amstel., 1682), chap. xxxii., "De Dilatabilitate Extraordinaria Cutis," with engraving. Quoted in John Bell's "Surgery," vol. iii. (1815), p. 36, and in Coll. of Surg. Museum Dermatological Catalogue, 1895, No. 287, p. 96. Ohmann-Dumesnil reports three cases of "elastic skin," but not so extreme as the above. *Internat. Med. Magazine*, vol. i. (1892), p. 244.

skin under the chin over the face to the vertex, while the skin over the knee could be extended half a yard, and it retracted to its normal position, and was not in folds; this mobility was limited to the right side. An "elastic-skinned man" was exhibited in London in 1882. Another case of a young man, æt. nineteen, is reported by Seiffert, who examined some skin from over the left second rib, and found that, contrary to Kopp's supposition, the elastic fibers were quite normal, but that there was a transformation of the connective tissue of the dermis into an unformed tissue like a myxoma, with total disappearance of the connective-tissue bundles. This brings it into relationship with fibroma, in which this ill-formed gelatinous connective tissue is a marked feature. Laxity of the skin after distention is often seen in multiparæ, both in the breasts and abdominal walls, from obesity, etc., and to a slighter extent in the degenerated skin of old age, but in all these the skin falls into folds.

Etiology.—Heredity * and, occasionally, congenital predisposition are the only positive causes assignable.

Fibroma occurs in both sexes and in various races, beginning often in the early months of life, and nearly always in childhood. It has no effect upon vitality, may be seen at every age, and in all stages of development, though the tumors are seldom large in early life.

Fibroma pendulum alone is more frequently acquired in later life, and in the case related was the result of injury and suppuration; instances of localized fibroma, the result of injury, have also been related by Schwimmer and by Taylor of New York; † but the cause cannot be traced in most cases. The Chinese are said to be more liable to it than other nationalities, and in them the tumor may attain to an enormous size.

* Virchow's cases—quoted by Hebra, vol. iii. p. 341, father, grandfather, brothers, and sisters affected; Ochterhony's case, *American Arch. Derm*, July, 1875, of a negro woman and her child; and Atkinson's cases, *New York Med. Jour.*, vol. xxii. (1875), p. 601, of a brother and sister affected, who said that their father had some kind of tumors—may be referred to. See also Wise's cases in Fox and Farquhar's "Tropical Skin Diseases," App. VI., p. 108, and Wagner's "General Pathology," p. 383, in which a father and son were affected.

† Taylor, "Molluscum Fibrosum and its Relation to Keloid, etc.," *Amer. Jour. Cut. Dis*, vol. v. (1887), p. 161. Also p. 41, on "Development and Course."

All Hebra's cases were in individuals "stunted in bodily growth, and of more or less defective mental capacity." This is true of the majority of cases, but there are many exceptions.

Pathology.—The most probable theory is that the disease originates in some congenital defect of development of connective tissue, though the tumors may not reveal themselves for years.

In 1882 von Recklinghausen * stated that the soft tumors were formed by the overgrowth of the inner lamellar sheaths of the nerve cords, the outer dense layer of the nerve sheath not being involved; that, originally springing from subcutaneous nerve trunks, they grew upwards still along the nerves round the sweat coils and other appendages of the skin and the coats of the blood-vessels. The connective tissue thus derived is soft and transparent, and different from the connective tissue of the skin. Krieger, Unna, and others confirm these observations, and point out that this explains the frequent plexiform arrangement of the deeper tumors. While the papillary layer and epidermis are usually unaffected, the appendages of the skin are more or less modified by the neoplasm, either by constriction or stretching, but the nutrition of these organs is unaffected, though their connective tissue is gradually replaced by that of the new growth.

Unna thinks that any congenital or nevoid growths are complications, and do not belong to the neuro-fibromata. Unna does not admit that these neuro-fibromata are of congenital or nevoid origin, but that they are "true acquired fibromata"; but clinically these growths are so mixed up and often show themselves very early in life, together with other admitted congenital deformities. that they cannot be logically separated, and most authors admit their congenital origin.

In the pendulous tumors, especially in those which have followed injury, the presumption is in favor of their being largely due to the obstruction of the superficial lymphatics, at least in the diffuse cases, but we are entirely ignorant as to how the obstruction arises. This theory, and many points in its anatomy, bring it into pathological relationship with elephantiasis Arabum, though there are many striking clinical differences.

* *Loc. cit.*, and Unna's "Histopathology," p. 844, and references.

The "keloid *en plaques*" of Taylor and Hutchinson are in Unna's view "a simple fibroma cutis."

Anatomy.—On section, the substance of the tumor is found to be made up of more or less imperfectly developed fibrous tissue, from which a small quantity of clear, yellow fluid can be pressed out. In a medium-sized tumor the fibrous tissue is firmest and most developed at the base and in coarse bundles; in the center it is loose and gelatinous, and at the periphery fine and delicate, like the normal corium, of which the papillary layer and its epidermal covering are quite unchanged. It must not, however, be supposed that there is any abrupt transition from the firm to the

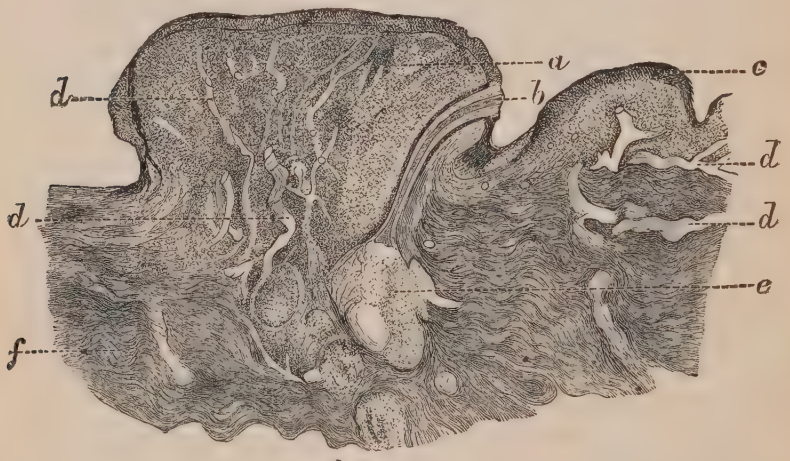


Fig. 54.—A pin's-head-sized tumor or fibroma × 50, composed of gelatinous tissue. *a*, portion of sweat duct; *b*, hair follicles; *c*, another tumor; *d*, *d*, large vessels supplying the tumors; *e*, sebaceous gland; *f*, fibrous tissue of corium.

gelatinous tissue. In a very young or small tumor, the whole contents may be gelatinous, while in an old or very large one there will be much perfect and compact, but coarse, fibrous tissue, with fine fibers between the meshes, but very little gelatinous tissue. Between the layers are cells with large, strongly refracting nuclei, and the cells may be in strata, foci, or scattered between the bundles; they are most abundant where the gelatinous tissue predominates, and are therefore comparatively scanty in the old tumors. Large vessels enter and leave the tumor at the base, and terminate in fine capillaries at the periphery. The condition of the glands has already been alluded to.

The above description was made from tumors of my Atlas case many years ago, and, though true as far as it goes, more modern staining methods show that, according to Unna, a peculiar variety of mast cell must be added as "the most striking constituent." They are pretty regularly

distributed and are numerous in the larger nodules. There are some ordinary mast cells, and others which with the polychrome methyl blue show a regular dense oval halo staining red, and about double the size of the contained mast cell with its small blue nucleus.

Diagnosis.—When there is a large number of soft sessile or pedunculated tumors on the trunk there can be no difficulty about the diagnosis.

Multiple fatty tumors have but slight resemblance; they are flatter, generally lobulated, never pedunculated, and do not project in the globose way that the majority of the fibroma tumors do.

From *soft moles*, the fact of moles being congenital would be sufficient; they, too, are nearly always pigmented. When few in number the tumors which grow between the shoulders in elderly people are very like them, and for practical purposes it may be considered that they are the same. One difference is generally present in the latter, viz., an alteration in the epidermis, which only occurs in fibroma when it has been inflamed.

In *sebaceous cysts* the sebum can be pressed out in large quantities, and the sac partly emptied, while in fibroma a large comedo is the most that can be squeezed out, and often nothing at all.

The *cysticcrous cellulosæ cutis* gives rise to subcutaneous pea to hazelnut-sized tumors, which are so hard that they are often regarded as fibrous tumors. Their great mobility, obvious subcutaneous position, scattered distribution, and clearly uniform size and hardness, the age of the patient when they commenced, as they would be unlikely to occur in childhood, are all points suggestive of their character, but their extreme rarity makes one forget the possibility of their existence.

Prognosis.—The tumors will almost certainly increase in number and size, though generally very slowly. They are merely inconvenient from their size and position, and are never dangerous to life.

Treatment.—Those that are pedunculated can be removed by ligature, the galvanic cautery, or the écraseur. The rest may be excised if they are not too numerous, but the removal must be complete.

Keloid has followed excision in several instances, including one of my own. (See Keloid.)

Whitehouse * gave three Asiatic pills a day for three months, when large numbers of tumors disappeared, and after increasing the number to four or five, at the end of seven months half the original number had disappeared.

In the dermatolytic cases, where a part only of a tumor has been excised, it has regrown; but where complete ablation has been practiced there have been several successful operations without recurrence, even with very large masses, such as Mott's, Kosinski's (thirty-five pounds), Pollock's, Stokes', John Wood's cases, and others. Care should be taken to secure the vessels before they are cut, as the bleeding may otherwise be very formidable, especially in the large tumors.

NEUROMA.

Deriv.—*νεῦρον*, a nerve.

Synonyms.—Nerve tumor; *Fr.*, Névrome.

The tumors of the skin, thus designated, are really fibro-neuromata, and consist, for the most part, of firm connective tissue, starting from the neurilemma, with non-medullated fibers over, but seldom within, them. Only two instances in which they affect the skin primarily are on record, viz., by Duhring and Kosinski, the "painful tubercles" † of Wood and other so-called instances of neuroma and fibro-neuroma of Recklinghausen, Köbner, and others being really subcutaneous.

The two cases alluded to were both men: Duhring's,‡ æt. seventy, and Kosinski's,§ æt. thirty. In the first they had been developing for ten years, in the second for fourteen. They affected, in one case, the left scapular region and the arm to the elbow—*i. e.*, branches of the circumflex chiefly—and in the

* *Amer. Jour. Cut and Gen.-Ur. Dis.*, vol. xvii. (1899), p. 583.

† Under the "Tuberculum dolorosum" cases of different structure are recorded, *vide* Unna's "Histopathology," p. 850. For other neuromata, *vide* R. W. Smith's "Treatise," *loc. cit.*, also "Neuroma and Neuro fibromatosis," by Alexis Thomson (Edinburgh, 1900), 4to.

‡ International Atlas, Plate XXXV. It was previously published in *Amer. Jour. Med. Sciences*, October, 1873, as a "Case of Painful Neuroma of the Skin."

§ "Neuroma Multiplex," *Centralblatt für Chirurgie*, No. 16, 1874.

younger man, the outer and upper two-thirds of the thigh and the buttock—*i. e.*, the small sciatic and external cutaneous. The tumors were flat, firm nodules, from a pin's head to a split pea or a hazelnut in size, confluent and disseminated, imbedded in the skin itself, and therefore movable only with it. The skin between the nodules was normal when pain was absent. The tumors were not painful at first, but became so afterwards, especially on pressure, which, in Kosinski's case, sent the pain radiating in all directions; while, in Duhring's, violent paroxysmal attacks of pain, shooting down the arm, occurred, during which the affected area became hotter and violaceous in color. In his case also there was slight scaliness over the nodules. Comparison with Hardaway's case of multiple myomata shows great clinical resemblance. Microscopically, in Duhring's case, the tumors were found to be in the skin, and "consisted essentially of the elements of the skin, densely packed connective tissue from medullated nerve fibers." It agreed with Virchow's description of amyelinic neuroma.

In both instances immediate relief from the pain was obtained by removing a portion of the nerve supply, the brachial plexus, and small sciatic respectively, which was followed by gradual subsidence of the tumors. Unfortunately, in Duhring's case, immunity only lasted six months, and within a year the pain was progressively returning, and in two years was as bad as ever. He lived six and a half years after the operation, dying at eighty-two without further change in the skin.

MYOMA.*

Deriv.—*μῦς*, a muscle.

Synonym.—Dermato-myoma. Muscle tumor.

From a pathological standpoint dermato-myomata may be divided into those of superficial and those of deep origin, which practically corresponds to the clinical subdivision into single and multiple.

* *Literature.*—*Brit. Jour. Derm.*, vol. ix. (1897), pp. 1 and 47; a case of myoma multiplex by the author, with colored plate. Abs. of all cases to date, with references and critical observations. Neumann's case was published contemporaneously in *Archiv f. Derm. u. Syph.*, vol. xxxix.

The multiple tumors, though rare, as there are a little over a dozen indisputable cases on record, are the most interesting to the dermatologist, and will be considered first. Besnier (1880) was the first to describe a living case, and to give a clear account of the disease.

The individual lesions vary from a millet seed to a hazelnut, but few are larger than a pea. The color is usually brownish-red, or some other shade of red removable by pressure, but in Hess' and Lukasiewicz's case it was yellowish, and even translucent. The surface of the skin over the tumors is always normal, the texture firm; they are in the skin, and freely movable with it over the subjacent parts. While they may be isolated, there is a strong tendency to group with or without coalescence, sometimes amounting to an infiltration. The groups may form into irregular patches, lines, or bands; but wherever there is an interval, the intervening skin is normal. The numbers of the tumors is very variable, sometimes being innumerable (Verneuil and Besnier), or they may be in moderate numbers and with a very limited distribution, the latter being the rule.

In Hardaway's, Hess', and my first case there was only a single patch, but where there are more there is no symmetrical arrangement, either in the groups or isolated lesions. Further, there is no special localization, as they occur on the upper and lower limbs, while the trunk, neck, and face (four cases) have been attacked in different instances, while in Verneuil's all the regions of the body were involved; but some authors exclude Verneuil's case and that of Brigidi and Marcacci.

The new growths develop very slowly and at first singly, but with a tendency to constantly increase both in size and number. There has been no antecedent lesion, except in Brigidi and

(1897), p. 3, also with colored plates. See also Besnier-Doyon's Kaposi, vol. ii., notes, p. 346. T. von Marschalko has published a case in a man, æt. twenty-eight, in whom it began eight years previously, and quite suddenly, he said. It began with itching, and was followed by pain and tenderness; pinching them up gave intense pain. They were closely aggregated in a large area on the right leg, where there were one hundred nodules, while on the left thigh were about fifty more scattered. The size was from a pin to a split pea. *Monatsh. f. prakt. Derm.*, October, 1900, p. 313. Abs., *Brit. Jour. Derm*, vol. xiii. (1901), p. 68. In Leslie Roberts' case, which also came under my observation—the lesions were small, pea-sized and smaller, on the cheek of a lady, æt. eighteen, *Brit. Jour. Derm.*, vol. xii. (1900), p. 117.

Marcacci's case, in which swelling of the part was the first sign observed. Sooner or later there was pain in half the cases, the rest having been painless throughout. The pains are usually spontaneous, paroxysmal, and severe, lasting from minutes to hours; but they can always be excited by strong pressure, and sometimes by changes of temperature, especially by cold.

These pains develop gradually, being absent until the tumors are the size of a pea or larger, but in Hardaway's case pain in the region in which the tumors subsequently appeared was the first symptom to attract the patient's attention. Itching was present in one of Jadassohn's cases, and preceded the pain in Marschalko's case.

Microscopical examination makes it probable that the pains are due to pressure on the nerve-endings outside the tumors. In other respects the tumors are always perfectly benign, never infect glands, and never recur after excision, but the pain has not been relieved in all cases by the operation.

Of thirteen cases, nine were females and four males, and the age at which the tumors began to develop varied from infancy (Hess' case was probably congenital) to sixty years.

Wolters reports two cases from Doutrelepont's clinic which, on microscopical grounds, he claims to be dermato-myomata, but my reason for excluding them from this group are given in my paper referred to. Clinically they correspond to xanthoma multiplex.

Morris has shown two cases at the Dermatological Society, one in a man of fifty-four, the other in his daughter, æt. about twenty-five. The tumors were painful, and the general appearance was like Lukasiewicz's case.

Pathology.—The bulk of the tumors is made up of smooth, muscular fibers, derived in most cases from the arrectores pilorum, but in Hardaway's and Hess' cases they were derived from the muscular coat of the vessels. In my case the tumors were in the corium round the hair follicles, but did not actually alter them, but invested them with a thick layer of smooth, muscular fibers, which also separated the acini of the sweat and sebaceous follicles; the muscular coats of both arteries and veins were conspicuously thickened.

Diagnosis.—The most constant features are their slow pro-

gressive development in number and size; the tendency to group; their unsymmetrical distribution; the fact that they are seldom larger than a pea; their dull red or yellowish color, firm consistence, and mobility over subjacent surfaces, and their strong tendency to ultimately become severely and paroxysmally painful; in this and their close grouping resembling true neuroma. Most of the cases have not been diagnosed until a microscopic examination has been made. Thus:

Lesser * diagnosed one case of lymphangioma as dermatomyoma, but the microscope showed its real nature. That it is often no easy matter to decide the nature of cutaneous and subcutaneous nodules is shown by the observations of Chantelux. In four cases in which nodules were excised and examined, one was a papillary fibroma of a sweat gland, another was a tubular epithelioma of a sweat gland, a third was a subungual corpuscular neuroma, while the fourth was a fibromyoma of the inner side of the ring finger. In my second case I diagnosed it as lymphangioma-like nodules, probably adenomata.

Treatment.—When not too numerous and over too wide an area they may be excised without fear of return, or if quite small they may be destroyed by electrolysis.

The more deeply seated leiomyomata (smooth muscular tumors) arise from the deep muscular layer of the skin, or from embryonic remnants, or reach the skin secondarily. They are mostly but not always single, are more common than the superficial form, and chiefly concern the general surgeon. Cases have been reported by Virchow, Förster, Klob, Sokolow, S. Marc, etc.

They may be sessile or pedunculated, from an almond to a walnut in size, as a rule, but may be as large as an orange. They occur chiefly on the mammæ and the male and female genitalia (in Passalacqua's case it was on the crest of the tibia), are contractile on exposure to cold, vascular, slow-growing tumors, and usually painless, but were intensely painful in Virchow's case.* They consist mainly of involuntary muscular fibers, but may contain much fibrous tissue and form a **fibromyoma** or be highly vascular, cavernous and erectile,

* *Virch. Archiv*, Bd. 123, Heft. i.

† In Virchow's case, in 1854, about a dozen developed about the nipple of a man.

constituting **angiomyoma**, or, if the lymphatics are involved, **lymphangiomyoma.** The angiomyomata are more frequently multiple than the rest, and are said by Babes to be derived from the arrectores pilorum. Ablation is the only remedy.

NÆVUS PIGMENTOSUS.

Synonyms.—Pigmentary mole; Nævus spilus; *Fr.*, Nævus pigmentaire; *Ger.*, Fleckenmal; Pigmentmal; Nævus pigmentosus; Linsenmal.

Definition.—Congenital pigmentary deposits, with or without other changes in the skin.

Symptoms.—Moles may be simply collections of pigment in the skin, without any other change **(nævus spilus).** These are generally quite small, not larger than a large lentil, are most common on the back, but may be seen elsewhere. They sometimes develop into moles of the usual character. Hebra considers that they are really not congenital, and therefore ought not to be called nevi, but it is impossible to distinguish those present at birth from those formed subsequently. They are often mistakenly classed with lentigo.

Another form of mole is more or less raised, and the surface is furrowed or otherwise uneven, and may be rough and warty in character **(nævus verrucosus),** or covered with soft papillary growths **(nævus papillomatosus).** The secretion from the papillary mole is often offensive. Some of the large ones are soft and lax, containing a quantity of fat and loose connective tissue, and resemble dermatolytic growths **(nævus lipomatodes).** A large proportion of moles possess a growth of more or less dense, dark, or less frequently lanugo-like hair **(nævus pilosus).** The color of moles varies from a *café-au-lait* tint to dark brown or black; occasionally, as Hutchinson has pointed out, growths precisely similar to raised moles exist without any pigment or perhaps are only a very pale fawn color: he calls them "**white moles.**" * A very large, corrugated, cerebelliform, unpigmented growth of this kind on the side of the face, with smaller growths on the neck and chin, was sent to me by my colleague, Mr. Pollard. A very large, unpigmented, cere-

* Author's Atlas, Plate LV., Figs. 2 and 3.

briform mole, covering the occipital region, is figured and described by Mansell Moullin.*

Moles vary infinitely in size, number, and distribution. The face, neck, and back are the favorite positions. Occasionally they have a traceable nerve distribution,† or they may occupy the intermediate zone between two neighboring nerve areas (Voigt's lines). Others again appear to have a metameric distribution, or that of the blood-vessels, while in the majority no systematic distribution is traceable.

In number they may amount to hundreds, scattered all over the surface, and while the majority are under half an inch, they may occupy whole regions. A distribution which has been observed in several instances‡ is the lower part of the trunk extending higher behind than in front, and going down nearly to the lower end of the thigh, compared to the position of "bathing tights." Whether, as in lumbar hypertrichosis, there is any connection with concealed spina bilfida, is worthy of investigation. They may grow in proportion to the growth of the bearer, become more prominent and hairy, but they seldom extend at the border; thus in a very extensive mole on the arm of a woman, æt. forty, sent to me by Mr. Cursham Corner,§ the mother stated that up to the age of five years it was brown and smooth, and that it then began to get papillary, more prominent, and with a black horny covering, but it had never extended at the border. I have, however, seen several in-

* *Brit. Med. Jour.*, January 31, 1891.

† See T. Okamura, "Zur Kenntniss der Systematisirten Nævi und ihres Ursprungs," *Archiv f. Derm. u. Syph.*, vol. lvi. (1901), p. 352. Illustrated.

‡ A Peruvian boy was shown at the Westminster Aquarium with a dark hairy mole with this distribution, and Nevins-Hyde records and figures two similar instances with dermatolytic growths in *Jour. of Cut. and Ven. Dis.*, vol. iii. p. 93; also a case of multiple lateral nevi in bands in *Chicago Med. Jour. and Examiner*, October, 1877. The sister of the above Peruvian boy had a still larger growth, extending from the nucha all over the back. Both she and her brother had hundreds of smaller hairy growths of all sizes scattered irregularly over the trunk, face, and limbs. A still more extraordinary case, with extensive dermatolytic growths all over the back, and nevi of all sizes elsewhere, is described and figured in Lavater's "Physiognomy," 1848, ed., Plates LXI. and LXII. See also Paget's case, *Lancet*, August, 1867; Ziemssen's "Handbook of Skin Diseases," p. 405.

§ Depicted in Plate LV., Fig. 1, Author's Atlas.

stances of extension of moles even in young persons, and Hutchinson* records a case where a mole on the side of the head spread at the margin in an adult. This extension is especially liable to occur in the flat moles which often cover a large area, project very slightly above the normal level, and are quadrillated by the deepened natural lines. They are usually of a pale brown color, and in a case of Colcott Fox's † occupied almost the entire vertical half of the body, like some cases of ichthyosis hystrix. In a similar case of Sequeira's, epithelioma developed at the age of forty-nine. Late in life, moles, especially if irritated in any way, are sometimes the starting-point of melanotic forms of malignant tumor. The melanotic growths are especially liable to start from moles on the foot. They were formerly called melanotic sarcoma, but J. Hutchinson, Jr., Unna, Gilchrist, and others‡ have shown that moles are epithelial growths, and that the malignant growths therefore are cancers, not sarcomata (*vide* Melanotic Sarcoma). For this reason, a mole which shows signs of activity in an elderly person should be removed at once.

When not too large, and if they are disfiguring from their position, moles may be removed by the knife§ or caustics, not taking away the whole depth of the corium if it can be avoided. Small growths can be destroyed by electrolysis, and hairs on moles may be permanently removed by the same method.

If the hair growth is very extensive the Röntgen rays may be used, as in such cases the disfigurement is so great that the small risk of a Röntgen ray burn may be justifiably incurred.

* Hutchinson's *Archives of Surgery*, vol. ii. p. No. 8, p 366.

† *Brit. Jour. Derm.*, vol. ix. (1897), p. 446.

‡ See a paper by Whitfield with good *résumé* of the subject, *Brit. Jour. Derm.*, vol. xii. (1900), p. 267.

§ See a case of removal of mole occupying half of the forehead by Morrant Baker in *Med. Chir. Trans.*, vol. lxi. Eve also removed a mole almost as large for a patient of mine, a young man, in whom a mole of the orbit and supra-orbital region was actually extending.

NÆVUS VASCULARIS.

Synonyms.—Nævus vasculosus; Nævus sanguineus; *Ger.*, Gefässmal.

Definition.—A congenital overgrowth of cutaneous vascular tissue.

Vascular nevi are divided into capillary or cutaneous, and venous or subcutaneous, but the latter may involve the skin as well.

Symptoms.—They present immense variety in size, from a pin's point up to a large tract, involving the greater part of a limb or region.

They are nearly always flattish, but may be on a level with the skin, or more or less raised above it; they are roundish or irregular in shape, of a uniform or lobulated surface, this depending upon whether they consist of capillaries, or large veins, or vascular sinuses, and the amount of intermediate connective tissue; their color is from a bright red to a deep purple.

The most common seat of the **capillary nevi** is on some part of the face, head, neck, or arms, but they may come in other places. They may be very small at birth, and increase up to the size of a crown, or less; and may then either remain stationary for the rest of life, or gradually undergo involution and disappear, leaving atrophic scars, either white or pigmented. According to Depaul, one-third of the children born at the Clinique de la Faculté de Médecine at Paris have them at birth, but most of them disappear within a month; but few authors go so far, either as to the frequency of their occurrence or their disappearance.

The capillary nevus is the most common, and is usually moderately elevated and of bright color. Another form is of a diffuse, very slightly, if at all, raised, red, or purplish-red patch or patches on some part of the face, often involving the whole of one side; this is the well-known "**port-wine mark,**" or nævus flammeus, the Feuermal of the Germans and Tache de feu of the French. In one of my cases * it occupied the right side of the face, but on the trunk and limbs extended over nearly

* Author's Atlas, Plate LVII., Figs. 3 and 4.

three-fourths of the surface. In a case of Pollitzer* it was punctiform and nearly universal except on the head and face.

The **venous nevus** is more raised than the capillary, often clearly defined, convex, smooth, or lobulated, of a dark purple color, very soft, inelastic, and compressible, unless inflamed and containing cysts, but filling again immediately. Such nevi occur chiefly on the lower part of the body, about the back, nates, pudenda, and lower limbs, but are not very unusual on the neck, beneath the lower jaw. They vary from half a walnut to an orange in size; the skin over them may be normal, or there may be capillary dilatation here and there. Some of these nevi are turgescent, erectile, or pulsating.

Anatomy.—Capillary nevi are simply capillaries increased in size and number, and closely aggregated.

Venous nevi are circumscribed and composed of thin-walled veins and sinuses, bound together with delicate connective tissue, and a few small arteries which run directly into the venous sinuses, without the intervention of capillaries.

Diagnosis.—This seldom offers any difficulty, except the faint nevi which are so common on the scalp, especially in the lower occipital region, and are usually discovered accidentally. They are easily mistaken for slight degrees of inflammation, especially when their existence has not been thought of. The *prognosis* is uncertain, many of the capillary form disappearing spontaneously, but many more increase in size up to a certain point, and then remain unchanged. Others ulcerate spontaneously, beginning in the center and spreading towards the periphery. There is no pain, and the ulceration is indolent and superficial, with scanty viscid discharge, which dries up into a scab, and when this comes off a thin scar replaces the nevus tissue; in other words, the nevus is cured. According to Stephen Paget, those nevi which are only slightly raised, ill-defined, and pale, are the most likely to ulcerate. The port-wine mark is usually stationary from beginning to end, but I have known it increase,† even in adults. On the other hand, I have seen a case in which at birth there was a crimson-tinted capil-

* Internat. Atlas, Fascic. xiv., Plate XLII.

† Francis' case of angioma serpiginosum, Plate XXXIV., Internat. Atlas, appears to have been a growing port-wine nevus.

lary nevus which occupied almost the whole of the face below the orbit except round the mouth and chin. When between thirteen and fourteen it began to disappear, and at eighteen there was only a palm-sized patch on each side in front of the ear and a narrow band across the nose.

Treatment.—Those that are small and superficial, not in a conspicuous position, and not growing larger, may be left alone, and there is a good chance of their disappearing spontaneously, and this tendency may be assisted by painting on collodion or the liquor plumbi subacetatis, collodion, from its compressing action, being preferable, or, if over a bony part, mechanical compression may be employed. Large port-wine marks cannot be successfully dealt with. B. Squire claims that repeated linear scarification will remove them without subsequent scarring; but neither have others obtained such results, nor have two of his own cases that I have seen been successful, one after more than fifty operations showing no improvement, the mother thought, though where nitric acid had been applied there were white scars. Duhring gives very much the same verdict with regard to Sherwell's multiple puncture method. In the extensive case mentioned above I obtained some improvement by means of electrolysis, passing a fine needle under the skin in closely arranged parallel lines. The methods employed to remove ordinary nevi come into the following categories: 1. To produce plugging within the vessels by exciting inflammation or by electrolysis. 2. To destroy the growth by caustic or the cautery. 3. To remove it by the knife or ligature.

When the nevi are small, or in such a position on the face that the kind of scar is of importance, inflammation, electrolysis, or excision may be employed. One method is by vaccination, which answers well for nevi of moderate size, several punctures being made carefully, so that the lymph is not washed out by the bleeding. Another plan is to pass some fine silk threads through it in various directions, until some inflammation is excited, repeating this as often as it is necessary for the occlusion of all the vessels. Injection with perchlorid of iron, chlorid of zinc, or tannin is effectual, but dangerous, unless great care is employed to prevent any coagula getting into the general circulation. This may be done by isolating the growth by a ligature applied for a few minutes before and after the injection.

Electrolysis is, however, preferable, as it is never advisable to run the smallest risk for such a trivial cause.

When electrolysis is employed to coagulate the blood only the positive pole is applied by means of a flat plate of metal, covered with chamois leather well wetted with brine, and bound on to the neck or limb, while a needle attached to the negative pole is introduced into the nevus. From three to eight cells are sufficient for coagulation, but many introductions of the needle are required. Some prefer the positive pole, as its coagulating effect is greater. The needle must then be of gold or platinum, as steel needles leave a black mark. Where actual direct destruction is desired, from fourteen to twenty cells are necessary. The needle should be passed in several directions below the base of the tumor, and it should be covered with gutta-percha or shellac at the upper part, where it is in contact with the skin, to prevent ulceration. Some advocate introducing both poles into the tumor, but this is necessary only for large nevi, and then Lewis Jones' instrument is useful. Five needles, alternately positive and negative, are fixed in one handle in a straight line, no wet pad is required. The proceeding is very painful with strong currents, and with weaker ones, many repetitions of the process are generally necessary. In any case, an anesthetic would be required, except for adults.

Superficial nevi of moderate size are often very conveniently attacked by the strongest nitric acid or the acid nitrate of mercury. This last, if carefully used, leaves a thin white cicatrix. Richardson strongly advocated sodium ethylate to be painted on to "destroy nevi painlessly." I regret to say that it has not done all that is claimed for it in my hands. It was very painful, required many applications, suppuration was produced, and although it eventually destroyed the growth, the result was no better than nitric acid, and the process was more prolonged. The ethylate must be freshly and carefully made, great care must be exercised to keep the part quite dry, and the crust should be allowed to loosen spontaneously. Another very good plan for superficial nevi is the "Marshall Hall" method. A cataract needle is introduced close to the edge of the growth, and is pushed towards the opposite side; the needle is then nearly withdrawn, and pushed across again about one-sixteenth of an inch from the first one, and so on in radiating lines until

the whole is traversed; cicatrization sets in gradually, and spreads over the whole growth, a few cases only requiring a second operation after some months.

For more projecting nevi, my colleague, R. W. Parker, strongly recommended excision, and Lister has removed very large nevi by this method. Others prefer the ligature, as a rule, for nevi of large size. A large nevus needle is passed under the growth, and the tumor somewhat raised; another, armed with whipcord attached to it by a piece of silk, is passed under this. The armed needle is then withdrawn, and the cord drawn through with the silk; the other needle is now threaded, and the cord drawn through as it is withdrawn. The looped ends are now cut, and the cord of one pair tied tightly with the adjacent cord of another pair, so as to divide the growth into quarters. The skin must be divided by a scalpel, to allow the ligature to sink into the groove thus made, as the strangulation is rendered more complete and less painful. Other methods are described in surgical works. Some recommend puncturing in several places with the Paquelin or the galvano-cautery, and Hutchinson has used the Paquelin most successfully for very large nevi. Coates of Salisbury claims that filling the tumor by injecting tr. iodi into its substance is efficacious, and free from the dangers of perchlorid of iron. On the whole, for most superficial nevi I think best of electrolysis or the application of the fuming acid nitrate of mercury; for those more projecting, where the position and size permit, Parker's plan of excision, now that primary union can be insured, gives the best cosmetic result, as a linear scar only results. Where expense is no object, and the repetition of the operation is not contra-indicated, electrolysis may be first employed, by which the vessels are occluded, but a small fibrous lump is left, which may be excised with a smaller incision than would have been required if cut out at first. If the position or size render excision unsuitable, either ligature or the galvano-cautery would probably be the best procedure.

No doubt, if Coates' iodin injection does all he claims for it, it would be very valuable, but I have no personal experience of it. Most of the methods would be advantageous under particular circumstances, of which the operator must form his own judgment, from what has been said.

TELANGIECTASIS.

Deriv.—τέλος, the end; ἀγγεῖον, a vessel; and ἔκτασις, extension.

Definition.—Acquired vascular dilatations.

Symptoms.—Telangiectasis differs mainly from nævus vascularis in its not being congenital. At the same time also, it is more often an enlargement of pre-existing vessels than a creation of new ones, and clinically resembles the slighter forms of nevus.

One of the most common forms is that which the older authors termed **nævus araneus**, or spider nevus. It consists of a central red, raised dot, from which fine lines radiate, with occasionally cross-lines connecting the radiations, the whole forming a stellate patch about one-eighth of an inch in diameter. The prominence is an aneurismal loop of an arteriole. The radiating lines are the dilated venous radicles. The lesions are, as a rule, solitary or few in number, occurring chiefly on the cheeks near the eyelids and the bridge of the nose. I have, however, seen them in enormous * numbers all over the face, below the forehead, and on the back of the forearms and hands in a girl of seven, in whom they commenced when five years old. Fresh dilatations were still appearing even at the age of fourteen; they gave a curious mottled look to the affected parts. Most of these differed slightly from the above description, there being no central projection, merely fine red lines, branching out quite irregularly from mere dots to an eighth of an inch across. I have met with a similar case in a girl of ten, principally occupying the region between horizontal lines drawn across the eyebrows and the end of the nose; but there were signs of fresh ones on the lower part of the face and forearms.

In another case, that of a man, they were almost confined to the right side of the face, where they were in great numbers. These lesions, singly or in small numbers, are sometimes seen

* Author's Atlas, Plate LXXI., Fig. 1. A still more general distribution is recorded by Mandelbaum of Odessa, *Viertelj. f. Derm. u. Syph.*, vol. ix. (1882), p. 213. They were in a continuous network on the face, where the disease had been longest, but had begun as spots and papules, and were after nine years in that condition on the trunk and limbs.

on the neck and chest, and other parts; they are most common in women and children with delicate skin, occasionally follow a slight injury, and have also been seen in a diffuse form after lightning strokes,* but, as a rule, are apparently spontaneous. Stellate telangiectases are part of the symptomatology of xerodermia pigmentosa. Another form, seen chiefly in the degenerated skins of elderly, but sometimes in younger persons, consists of slightly convex or flat, hemp-seed-sized spots, raised a little above the surface, of a uniform bright crimson, or, occasionally, of purplish hue, and looking like a blood extravasation, showing no indication of their structure to the naked eye, but really consisting of a tuft of dilated capillaries. They are chiefly seen on the upper part of the trunk, neck, and face, and were called **nævus sanguineus,** but the term "nevus" is a misnomer for non-congenital growths.

Brocq † records a case of a woman of fifty-nine, in whom there were numerous telangiectatic plaques, not raised above the surface, on the lower extremities from one-eighth to half an inch in diameter. There was a wafer-like scale over the plaque and slight scarring in places where there had been more or less involution.

In Ullmann's and Kopp's cases there were veritable angiomata. In Ullmann's case there were nodules from a millet seed to a pea on the face of a woman of forty which could be emptied on pressure. In Kopp's case the nodules were not so large, and on the scrotum, genital region, and flexor aspect of the limbs. This last case appears to resemble Fordyce's case of angiokeratoma of the scrotum (see p. 614).

The scars of Röntgen ray burns frequently display a close network of dilated vessels, and in two cases I have seen the same condition after long or repeated exposures without any breach of surface, and therefore no marked scarring, although there was some atrophic change in the skin. *Telangiectatic scar-*

* See a case by G. Boner of Duns, reported in the *Lancet*, with woodcut of telangiectases on the arm only.

† *Jour. des Maladies Cutanées*, vol. ix. (1897), p. 97. The case was shown to the French Dermatological Society. He gives references to seven other cases resembling his own more or less. Ullmann, *Archiv f. Derm. u. Syph.*, vol. xxxv. (1896), p. 195 and photo. Kopp, *loc. cit.*, vol. xxxviii. (1897), p. 69. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 416. Abs. of Ullmann's *Annales de Derm*., vol. viii. (1897), p. 141.

ring is, therefore, almost characteristic of Röntgen ray burns.

The only other condition that concerns the dermatologist is the dilatation of venules of the face, called **Rosacea**, or chronic venous congestion of the face, which is, as a rule, mixed up with acne, and is described with acne rosacea, but it may occur apart from that condition, as in people much exposed to the weather, such as seamen, coachmen, etc. It may occasionally occur after a single exposure to the sun, but, as a rule, it is the result of causes which lead to chronic congestion of the face or obstruction in the venous flow, whether central, as in weakly-acting hearts, or peripheral, as in chronic chilling of the surface. This I have seen in a lady who was devoted to motoring. The result is that the venous radicles become dilated and visible on the surface, especially on the nose, cheeks, and chin. The further results are described in the third stage of acne rosacea.

Schweninger has drawn attention to the occurrence of arborescent dilatations of the cutaneous vessels along the rib border of one or both sides in obese men with a feeble circulation; it also occurs when there is obstruction to the intra-thoracic venous flow, and Blake calls it the athlete's girdle. Similar arborescent dilatations often occur at the border line in general and localized sclerodermia.

Treatment.—By far the best treatment for the dilated vessels is occlusion by electrolysis, as described for removing superfluous hairs. In the so-called nævus araneus the point of the negative pole needle is inserted into the central projection, and a current of about three cells transmitted. Slight frothing ensues; the skin just round the needle blanches, while beyond it is reddened. The needle must only be kept in three or four seconds, or there will be a mark. The dilated venous radicles may be occluded in a similar way, as described under acne rosacea.

ANGIOMA SERPIGINOSUM.

Synonyms.—Infective angioma *; Nævus lupus.

Definition.—A disease in which minute vascular points are formed in rings or other groups, which spread at the borders, while fresh points are continually developing beyond them.

This disease is very rare, and was first described by Hutchinson.† Other cases have been met with by Jamieson, Lassar, Waren Tay, J. C. White, Leslie Roberts, Majocchi, and myself.

This disease consists of minute, bright red, vascular points imbedded in the skin, "like grains of cayenne pepper." These are formed into small groups, which spread peripherally, clearing in the center, and thus forming rings not exceeding half an inch or so across, but in the border the vascular dot character of the components of the ring is always preserved. Fresh points are continually developing a little beyond the patches ("infective satellites," as Hutchinson calls them), and thus the process is continually repeated, and, the rings meeting, large areas of disease with gyrate borders are produced. Scattered

*I have ventured to give another descriptive adjective than that of Hutchinson, since his word "infective" would have to be rendered "Contagiosum," and thus convey a false notion, which he himself did not intend, the word "infective" here only indicating the infective influence on adjacent tissues.

† *Literature.*—The first four cases are described in Hutchinson's *Archives of Surgery*. In describing Waren Tay's case, he gives references to the rest. Vol. iii. (1891), p. 166, illustrated (Plate IX.). Compare with Plates XIII. and XIV., which he calls lupus marginatus. These cases are republished in his smaller Atlas with the same numbers. J. C. White, *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 505, with illustrations of microscopical appearances. Leslie Roberts, *Brit. Jour. Derm.*, vol. ix. (1897), p. 180, with histology. Francis' case, "A Rare Form of Angioma Serpiginosum," Internat. Atlas, Plate XXXIV., appears to be a growing capillary nevus of the "port wine" character. David Walsh's case, Hutchinson's *Arch.*, vol. viii. (1897), Plate 143, was in arborescent lines, it spread down one arm and all over the body, leaving slight scarring, *Brit. Jour. Derm.*, vol. x. (1898), p. 18. It was a remarkable serpiginous angioma, but quite different from the text cases. Morgan Dockrell, *Med. Soc. Trans.*, vol. xxi. (1898), p. 654, records a case under this title in which the telangiectatic vessels began at three months old, persisted until he was sixteen years, and then disappeared, leaving scars; but the description is insufficient for exact identification.

"cayenne pepper" dots, and lines of them, are seen beyond the main patches, and the skin between the rings is generally pinkish in hue; in Tay's case the ringed arrangement was but slightly indicated, and there was no definite grouping. The dots vary from the diameter of an ordinary pin's head to some so small as only to be visible with a lens. Most of them are bright, and pale on pressure, but the larger-sized ones are purplish in hue and often unaltered by pressure. In three out of the first four cases scarring was certainly absent, and Hutchinson was not sure about it in the fourth case. This case began at the back of the arm, and spread up and down the limb to the shoulder and to below the elbow. Jamieson's case began on the front of the right forearm, and spread over the front and back of the arm and forearm, up to the deltoid, and down to the radial side of the wrist and back of the hand, to the root of the thumb and forefinger. There were also several groups along the inferior margin of the fifth rib on the right side, from one inch inside the nipple to the right border of the sternum. Lassar's case began on both cheeks and increased to the size of a florin; a few groups came on the ears, and later, on the right upper limb, and extended from the humerus to the back of the right hand in eight weeks. Tay's case began on the right calf, and spread nearly all over the leg, and another patch formed on the front of the thigh. The left limb was less affected. The disease tends to spread but very slowly, as a rule, though Lassar's case, as far as the arm was concerned, was a marked exception. There are periods of comparative quiescence and activity.

In Leslie Roberts' case, a girl, æt. fifteen, it began on the leg when four years old, and spread from ankle to buttock in countless vascular puncta in circular and crescentic clusters. She was born with a nevus on her lip.

In White's case there was a purplish-red mark at birth below the right scapula; it increased slightly, but it was not until he was four years old that "satellites" appeared. It formed when the boy was seen, æt. twelve years, a belt three inches wide, extending for six inches from the right scapula towards the nipple. There were about two dozen lesions from a pin's head to two-inch circles. There was no scarring, only purplish discoloration inside the circles.

In my own case, a pregnant woman of twenty-one, the face only was affected. It began two months before I saw her, on the right cheek, then appeared on the forehead, where there were three circles about three-quarters of an inch in diameter, made up of punctiform vascular dots. There were two on the left cheek, two over the lower jaw, and two small groups on the right cheek. There was no scarring even where the original patch on the right side had faded, except a few puncta, and left the skin white.

Etiology.—Three out of the first four developed under two years of age, and all these three were girls. Jamieson's case developed in a boy, æt. fifteen years, after gymnastic exercises; Hutchinson's developed from a small port-wine mark soon after birth; Lassar's case after convulsions connected with dentition; and Tay's case without apparent cause when two years old. White's case started from a nevus. In my own case there was mitral disease. Of the six cases, therefore, three started where there was pre-existing nevus and three under circumstances suggestive of vascular strain.

Pathology.—Its pathology is unknown. Hutchinson considers it a sort of lupus and allied to lymphangiectodes or lymphatic lupus, as he terms it, because both begin in early life, spread at the edge, and have satellites, and any disease with these phenomena comes under his definition of the lupus family, but these views are not generally accepted as regards lupus in general. Lassar, however, described his case as a form of lupus erythematosus.

Anatomy.—Jamieson's case was examined by Edington, who found the epidermis normal, except that the interpapillary processes of the rete went deep into the corium. The vascular loops at the apices of the papillæ were dilated into wide spaces, some still with blood in them. Anatomically, he considered that the condition was that of a superficial nevus. Councilman and Bowen, who examined White's case, concluded that there was first a growth of the endothelium and perithelium of the vessels of the corium, and along with this a formation of new vessels both of them; and Darier, who also examined sections, regarded it as an angio-sarcoma of special type. Majocchi * found the ectasic capillaries round the follicular orifices. Leslie Roberts only found spaces formed by dilated vessels.

*I have only seen a short abstract of this case in the *Monatsh.* Majocchi called it, "Telangiectasis follicularis annulata," "an undescribed dermatosis."

Diagnosis.—This can scarcely offer any difficulty. The commencement some time after birth at once shows it is no mere birthmark, and its punctiform character in groups, rings, lines, or single dots, and tendency to spread in an annular manner, with the continual formation of fresh foci beyond the main patch, stamp it as something peculiar. The stellate telangiectases, which occur at all ages and may be very numerous, are distinguished not only by their branched character, but by the absence of any serpiginous tendency. Though compared by Hutchinson to lymphangiectodes, that only refers to the mode of development, as their physical characters are quite different, except that some telangiectases are often present along with the vesicles in that condition.

Treatment.—The treatment hitherto tried has been unsuccessful, the disease spreading in spite of the measures adopted. I should be inclined to try electrolysis along the border of the affected area, and so produce occlusion of as many vessels as possible along the spreading edge and in the outlying puncta.

LYMPHANGIECTASIS AND LYMPHANGIOMATA.*

These two conditions, as Unna has pointed out, frequently merge into each other, for the latter is always accompanied by the former, and even in lymphangiectasis there is endothelial proliferation. Lymphangioma, Unna considers, is comparable to varicosity of the blood-vessels rather than to true hemangioma.

There are two superficial forms of dermatological interest, lymphangiectasis, the lymphangioma superficiale of Unna, in which pale elastic elevations appear on the skin, which may become so superficial as to be bluish and translucent, or actually vesicular and transparent; if these vesicles or nodules are punctured or ruptured, lymph flows from them in large quanti-

*Unna's "Histopathology," p 919–933. *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. x. (1892), p. 213, illustrated. Vol. xiii. (1894), p. 137, for Elliot's case, and vol. xvi. (1898), p. 67, for White's case. Priv. Notes, L., p. 141. A gentleman, æt. forty-two, thirteen years before had a sudden attack of lymphangitis in the forearm with great swelling which never quite subsided, and during the last nine months had had minute closely aggregated vesicles at the wrist, which never went away, and were fuller in hot weather.

ties, and the discharge may go on for hours. This condition is really the only visible change in the skin, and Heuss', Epstein's, G. J. Elliot's, White's, and Pringle's cases, and one of my own, are examples, and many more might be cited. It is due to a superficial erysipelatous, or other inflammation, or the consequence of a traumatism. More frequently the condition is associated with lipomata or elephantiasis, either congenital, as in elephantiasis congenita lymphangiectodes, or acquired, either in the tropical or home form of elephantiasis.

The second superficial form is described here under the title of lymphangiectodes, because it was the original name given by Tilbury Fox, and still represents as much of the pathology as lymphangioma does. Unna's lymphangioma of the hypoderm rests on Pospelow's case of so-called lymphangioma tuberosum multiplex, which will be further alluded to in the description of the disease originally described by Kaposi under that title, and adhered to here, as its pathology is still a matter of discussion, though the tendency is not to admit that it is a lymphangioma.

Cystic lymphangioma is the hygroma of surgeons, and does not concern the dermatologists; Dale James' case * was an interesting variety.

For further discussions on lymphangiomata, the papers of Francis and Leslie Roberts † may be read.

LYMPHANGIECTODES.‡

Deriv.—*λυμφαγγία*, lymph vessels; *ἔκτασις*, dilatation.

Synonyms.—Lymphangioma circumscriptum (M. Morris); Lupus lymphaticus (Hutchinson); Lymphangioma capillare varicosum (Török); Lymphangioma cavernosum (Besnier); Angiome cystique (De Smet and Bock).

Definition.—A localized disease consisting of closely crowded, deep-seated vesicles supposed to be connected with the lymphatics.

This is a rare disease, which was first described by English authors. Tilbury Fox first, then Hutchinson, described cases,

* Read before Sheffield Med. Chir. Soc., *Lancet*, February 28, 1891.

† *Brit. Jour. of Derm.*, vol. v. (1893), pp. 4, 65, and 364.

‡ *Literature.*—T. and C Fox, "Lymphangiectodes," *Path Trans.*, vol. xxx. (1879), p. 470, with histology—a complicated case. Hoggan also

but of late so many have been published that it is no longer necessary to particularize them. Eight cases have occurred in my own practice.

Tilbury Fox's and Besnier-Vidal's cases were complicated with venous nevus; Köbner's was described as a case of cavernous angioma, lymphangioma, and neuro-fibroma; and in Dale James' case also, the vesicles were seated on a fibro-cavernous structure; the uncomplicated cases resemble each other very closely.

Symptoms.—The disease consists of minute, deep-seated vesicles, like frog-spawn. They are closely crowded together in irregularly outlined groups of from one-third to three-quarters of an inch in size, and these again are arranged irregularly with healthy skin between them, or with only a few scattered vesicles on it. They are usually in a single patch from one to three inches in diameter, or at least confined to one region, of which the following areas are on record: the face, lip, neck, deltoid and scapular regions, the axillæ, the arm, leg, thigh, buttock, trunk, groin, and vulva. In Corbett's case it formed a half-inch band from the middle of the thigh behind to the tendo Achillis, and thence under the external malleolus it broadened and ended on the middle and inner margin of the foot, the majority have occurred on the left side. The *mucous membranes* may be attacked, the tongue * most frequently; in Brocq's the tongue and soft palate; in Schmidt's the upper, and in my own the lower

gives histology of this case, *Jour. of Anatomy and Physiology*, vol. xviii. (1884), p. 322. Hutchinson, "Lupus Lymphaticus," two cases, *Path. Trans.*, vol. xxxi. (1880), p. 342, with two excellent colored plates and very good clinical account with, histology by Sangster—these two and another are reproduced in Plates XV. and XVI., vol. i., *Archives of Surgery*. Hutchinson, Jr., "Histology," *Path. Trans.*, vol. xxxv. (1885), p. 467, with plate. Köbner, Berlin Med. Soc., 1883; reported fully in *Ann. de Derm. et de Syph.*, vol. v. (1885), p. 293. Morris' case, Plate I., International Atlas. My own Atlas, Plate LIXXV., four cases. A. G. Francis, *Brit. Jour. Derm.*, vol. v. (1893), pp. 4, 65, and 364, several new cases and good *résumé* of old. Brocq and Bernard, *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 305, gives nearly all the references and critical review. Kaposi, Besnier-Doyon, vol. ii. p. 378, notes by translators. H. Schnabel, *Archiv f. Derm.*, vol lxi. (1901), p. 177, histological plates and many references.

* Butlin, "Diseases of the Tongue," 1885, Plate VII., colored, reported as a degenerated nevus. Hutchinson's smaller Atlas, Plate LXXXVI. Brocq, *loc. cit.*, gives references to seven cases.

lip,* was affected in association with lupus vulgaris of the face; Doutrelepont has met with a similar combination; in Walsh's, the papebral conjunctiva; in Leroux's, the buccal mucous membrane; in Heuss', the in- as well as the outside of the labia vulvæ. Probably no part of the skin or mucous membrane is absolutely exempt, but the most common positions are the side of the neck, the scapulæ, axillæ, and sides of the trunk, on the skin and the dorsum of the tongue, on mucous membranes.

The vesicles are not of the ordinary kind, being deep-seated, with thick walls, and some of them are almost warty-looking. The majority are about the size of a small pin's head, but they vary from the smallest recognizable up to a large hemp seed. They are either perfectly colorless, or have a straw or pinkish tinge, and if pricked, emit a clear, colorless fluid of alkaline reaction, containing a few lymph corpuscles. Some have vascular striæ or tufts over them, others have red dots, others again evidently contain extravasated blood, and even external hemorrhage may occur in places like the axilla, the result usually of friction or other trifling injury. In one of Hutchinson's unpublished cases nearly all the vesicles had vascular tufts obscuring the vesicular character. In one of my cases these vessels were conspicuous during the development of fresh vesicles, and disappeared subsequently. Verrucose projections with horny concretions are sometimes present. There are no inflammatory or subjective symptoms as part of the disease, but J. C. White's case had had frequent attacks of dermatitis and Hutchinson also speaks of their liability to erysipelatoid inflammation. The disease is extremely chronic in its course, lasting for an indefinite number of years, if not interfered with, spreading slowly at the periphery by the formation of fresh groups of vesicles, and with great tendency to recur after partial or apparently complete removal. In the second of my cases, æt. thirteen, the disease had only been noticed a month, and appeared on or near some scars produced by the removal during infancy of a congenital tumor, which the mother said was not like the present disease, but there must have been several growths, judging by the scars over the left ribs.

Etiology.—Sex appears to have no influence. Nearly all have begun in childhood, a few in early infancy; one of mine began

* Atlas, Plate LXXIV., Fig. 4.

when six months old, and one or two have been possibly congenitally present, and all are probably of congenital origin. Several have been associated with venous nevus, and Besnier attaches great etiological and pathological importance to this.

Pathology.—All but Besnier and De Smet and Bock regard it as of lymphatic origin, and that the main features are overgrowth and dilatation of the lymphatic vessels; of congenital origin and comparable to blood vascular nevi; but when one comes to details, the variety of nomenclature indicates the variety of opinion. De Smet and Bock consider that the vesicles are serous cysts derived from the arterial capillaries of the papillary body. Török, while convinced that the change is mainly lymphatic, admits that the blood-vessels take part in the process, a view confirmed by its occasional association with blood-vessel nevi. The varying number of dilated blood-vessels at different periods perhaps explains some of the discrepancy. Brocq * considers it to be a neoplasia of the lymphatic vessels. All are now agreed that there is overgrowth as well as dilatation. Hutchinson's view that it is a kind of lupus is not accepted by anyone except his son, but he uses the term in a special clinical sense, rather than to imply that it has any relationship to lupus vulgaris.

Anatomy.—The histology has been investigated by T. and C. Fox, Sangster, Hutchinson, Jr., Török, Schmidt, De Smet and Bock, Jacquet, Heuss, Francis, Roberts, Freudweiler, Brocq, Gilchrist, etc. All are agreed in the presence of cysts of various sizes, chiefly in the papillary, but also in the deep part of the cutis, and sometimes deeper still. For further details see the references.

Diagnosis.—Its commencement in early childhood, its slow but continuous progression, the congeries of small, thick-walled, warty-looking vesicles in the cutis, their straw color, with vascular striæ, and their limitation to one region, are the most distinguishing features, which, once seen, could scarcely be mistaken for those of any other affection, except cases of lymphangiectasis like those of Epstein and Elliot,† from which it

* Brocq, *loc. cit.*, discusses in detail the pros and cons of the blood or lymph vessel origin of the disease, and is a good contribution to the pathology of the affection.

† Case of lymphangioma, *Amer. Jour. Cut. and Gen.-Ur. Dis.* vol. x., p. 213, illustrated, also G. T. Elliot, *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 137. Fox and Hoggan, *loc. cit.* J. C. and C. J. White, *Amer. Jour.*

might be distinguished by the continued lymphorrhagia when a vesicle of the latter disease is punctured, and probably also that such cases may not be restricted to one region.

Prognosis.—There are too few cases on record to speak decisively; as far as we know, spontaneous disappearance is not to be looked for, and even after apparent destruction it has returned.

Treatment.—Destruction by caustic or excision has been practiced, but not always with success, as recurrence often took place near the cicatrix. In one of my own cases the greater part had been destroyed by caustics a year before I saw it, but many fresh groups had appeared on and round the scars of previous operations. I tried electrolysis; each vesicle was pierced by the needle attached to the negative pole, and eight to ten cells were employed; the result was satisfactory for some time, but there was partial recurrence three years later. Still, unless excision could be accomplished going widely beyond the visible disease, electrolysis is probably the best plan, if it is interfered with at all.

LYMPHANGIOMA TUBEROSUM MULTIPLEX.*

Synonyms.—Eruptive Hydradenoma (Jacquet-Darier); Adenoid epithelioma of the sweat glands (ditto); Syringo-cystadenoma (Török); Syringadenoma or syringoma (Unna); Cystic eruptive epithelial celluloma (Quinquaud); Benign cystic epithelioma (Jacquet); Benign epithelioma with colloid degeneration (Philippson); Benign epithelial cystadenoma and cystic epithelial nevi (Besnier); Endothelioma tuberosum multiplex colloides (Kromayer); Syringocystoma (Neumann); Hemangio-endothelioma tuberosum multiplex (Jarisch).

Kaposi was the first to describe a case of this rare disease from Hebra's clinic, and the name he gave it stands, therefore, at the head of this article on the score of priority, but not as

Cut. Dis., vol. xvi. (1898), p. 67, and many other such cases are scattered through medical literature.

* *Literature.*—Hebra's Atlas, Lief. x., Tafel 6. Hebra, vol. iii. p. 387. *Syd. Soc. Trans.* "Hydradénomes éruptifs," Jacquet et Darier, *Annales de Derm. et de Syph.* (1887), p. 317. Pièce No. 1175 du Musée de l'Hôpital

representing the true nature of the growths, as it is worse than useless to change it until more general agreement is obtained as to the pathology of the affection, than the farrago of synonyms indicates to be now the case.

Including one of my own, about a score of cases are known besides those of Pospelow, Van Harlingen, and Leslie Roberts, which will be considered separately.

In the majority of the cases the lesions occupy the front and sides of the trunk, generally appearing under the clavicle, where they are always most abundant, and extending more or less downwards, reaching in the Hebra-Kaposi case all over the front of the body; if it extends upwards, the neck, and perhaps even the lower part of the face, is reached, while in Quinquaud's and Philippson's cases the forehead and orbits were affected and the lower part of the face was free. In Jarisch's case the orbits only were involved. Posteriorly it seldom extends further than from the hair line to the nucha; both segments of the upper limbs, and the upper segments of the lower limbs, have been sparsely involved.

The lesions are discrete, crowded in some parts without definite grouping, but with a slight tendency to an arrangement

St. Louis (1886). "Syringo-Cystadenom," L. Török, *Monatshefte f. prakt. Derm.*, vol. viii. (1889), p. 116. "Die Beziehungen des Kolloid Milium (E. Wagner) und des Hydradenom (Darier-Jacquet) zueinander," L. Philippson, *Monatshefte f. prakt. Derm.*, vol. xi. (1890), No. 1, and English Trans., *Brit. Jour. Derm.*, vol. iii. (1891), p. 35. "Cellulome épithélial éruptif," Quinquaud, Comptes Rendus (Paris, 1890), p. 412, *Congrès Int. de Derm.* (Paris, 1889). "Épithéliome kystique bénin de la peau," Jacquet, *loc. cit.*, p. 416. "Lymphangioma Tuberosum Multiplex," Lesser and Beneke, Virchow's *Arch.*, 1891, Heft 1. "Zur Lehre von den Haut-geschwulsten (Hemangio-endothelioma)," Jarisch, *Arch. f. Derm. u. Syph.*, vol. xxviii. (1894), p. 164. "Endothelioma Tuberosum Colloides," Kromayer, Virchow's *Arch.*, Bd. cxxxix., p. 282. "Epithéliomes Kystiques bénins," Brocq, *Annales de Derm. et de Syph.*, vol. viii. (1887), p. 289. "Hemangio-Endothelioma Tuberosum Multiplex," by Hugo Gutti, of Breslau; reprint Braumüller, 1900, from Kapos' "Festschrift." "Hemangio-Endothelioma Tuberosum Multiplex," and "Hemangio-Sarcoma Cutis," M. Wolters, *Archiv f. Derm. u Syph.*, September, 1900, p. 269. Abs. in *Brit. Jour. Derm.*, vol. xiii. (1901), p. 75. Five cases by A. Gossman in October and November Nos. of *Archiv* (1901), p. 177. He calls them Nævi Cyst-Epitheliomatosi Disseminati. Abs. *Brit. Jour. Derm.*, vol. xiv. (1902), p. 191. A new case by the author, *Clin. Soc. Trans.*, vol. xxxii., 1899. Colored plate and references to date.

in oblique lines from the clavicles to the sternum, apparently following Langer's lines of cleavage. Individually they are convex, roundish, or oval, rather firm nodules, imbedded in the skin, not very well defined, and only slightly raised above the surface. They range in size from a pin's head to a small pea, or occasionally as large as a bean. In color, they are pink, brownish or reddish-yellow, slightly paler on pressure, while the small ones are often the color of the normal skin. The surface is smooth to the naked eye, but with a lens, fine corrugations most marked at the border, can be seen (on the larger growths). Telangiectases on them are exceptional. On many of them one or more yellowish or translucent milia can be found, or they may occur separately. Sensory symptoms are quite absent as a rule, but Kaposi spoke of them as being slightly painful.

They generally commence in childhood or adolescence, and slowly increase in numbers, and still more gradually in size, and show no tendency to involution. A case of Hallopeau's, very unlike the rest, developed true epithelioma; the primary lesions were yellow rounded firm nodules on the eyelids of a man, and dated from infancy.

Anatomically, in the center of the derma are cysts of various size, lined with flat nucleated epithelium, and from most of these proceed straight or winding ductlike cylinders of epithelial cells, of about the same thickness as a sweat-gland duct. By the accumulation of epithelium, and subsequently hyaline degeneration, these pseudo-ducts may become dilated into cysts, some of which are isolated in the derma without any process belonging to them.

When authors tried to read the pathogenetic meaning into these anatomical facts, difficulties began. Kaposi thought they were lymphangiomatous cysts, "Darier and Jacquet first thought that they were adenoid growths from the sweat glands, then that they were sweat-gland epitheliomas, Quinquaud and Jacquet that they were benign cystic epitheliomas," Kromayer and Jarisch that they were endotheliomas derived from the blood-vessels; Gutti and Wolters also consider them to be hemangio-endotheliomata. Török suggested that they develop from embryonic positions of sweat glands in accordance with Cohnheim's theory, and this seems a feasible idea,

and his name, syringocyst-adenoma, is the least clumsy and objectionable of the names proposed. As, however, his idea has not been proved, and the majority of observers derive them from the blood-vessel endotheliomas, it is better to retain for the present the original designation, and at least we shall then know on what peg to hang these rare cases as they arise. The milium so often present is also, no doubt, of embryonic origin, as Robinson first showed was often the case with these white fatty bodies.

Diagnosis.—The diagnosis should not be difficult, as a rule; their slow development generally dating from the second decade of life; their predominance on, and perhaps limitation to, the upper part of the front and sides of the chest; the color being from normal to reddish or yellowish-brown; their size from a pin's head to a pea; the arrangement in oblique rows; the firm consistence and neoplastic character, with absence of sensory symptoms—would be the most distinguishing features, and no other disease presents similar appearances, except epithelioma adenoides cysticum. The comparison between the two will be made under the latter affection, in which also the prognosis and treatment are identical, and will, therefore, not be discussed here.

There remain Pospelow's * and Van Harlingen's † cases, which are reported as instances of lymphangioma tuberosum cutis, and a case related and identified by Leslie Roberts ‡ as of the same character.

No one can read these cases carefully without being struck by their resemblance to each other, and to some cases of fibroma; and since Van Harlingen now admits that his case was probably a fibroma, further discussion is unnecessary.

* Pospelow, *Vierteljf. Derm. u. Syph.*, vol. vi. (1879), p. 521.

† Van Harlingen, *Amer. Derm. Soc. Trans.*, 1881, and "Manual of Diseases of the Skin," 2d ed., 1889, p. 299.

‡ Leslie Roberts, *Brit. Jour. Derm.*, vol. viii. (1896), p. 312.

EPITHELIOMA ADENOIDES CYSTICUM (Brooke).*

Synonyms.—Adenoma of sweat glands (Perry); Multiple benign cystic epithelioma (Fordyce); Hemangio-endothelioma tuberosum multiplex (Jarisch); Acanthoma adenoides cysticum (Unna).

This is an equally rare disease with lymphangioma tuberosum multiplex, with which it presents many resemblances and analogies, but as there are some important differences, they are kept apart, at all events for the present.

The lesions are for the most part on the face, and include Perry's case, which may be taken as the type; the Brooke and Fordyce series, Balzer and Ménétrier's case, and † a few others.

In adopting Brooke's name, epithelioma, I have been guided by the fact that it is the one most widely accepted, but the generic term epithelioma is used in a wide, and in this instance benign sense, indicative of the supposed derivation of the growths from the epidermis.

In Perry's case the lesions were limited to the face and scalp in closely aggregated groups about the center and sides of the forehead, the root of the nose and inner canthi, the cheek and upper lip close to the nose, and the lower lip, except as regards the forehead, having very nearly the distribution of a marked case of adenoma sebaceum, which it resembled, except that the lesions were white and had no telangiectases, but this latter feature was to a slight extent present in Fordyce's cases (a mother and daughter). In Philippson's first case the nodules were limited to the lower eyelids, the color of the normal skin, but translucent and only distinguished by the microscope from colloid milium.

In Brooke's four cases (three in one family) the face was like Perry's case, but one, in addition, had them on the back of the

* *Literature.*—Perry's case, International Atlas, Part III. Plate IX.—a good representation. Brooke, *Brit. Jour. Derm.*, vol. iv. (1892), p. 269—a good article and references to date, and four new cases. Fordyce, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. x. (1892). Kromayer, *Virch. Arch.*, vol. cxxxix.

† Balzer and Ménétrier, "Adenoid of the Sebaceous Glands of the Face and Scalp," *Arch. de Physiol.*, 1885, p. 515, quoted in Unna's "Histopathology," p. 1124.

neck, the upper third of the back, and very marked in the interscapular region. In another there were more on the back than the front, and the scalp was much affected, but the hair grew on the lesions. The color was normal or with a slightly bluish-yellow tint. In Fordyce's cases some of the lesions were pearly and translucent, with some telangiectases, and the lesions were less crowded than in the other cases.

It is probable that Jamieson's * and Rosenthal's † cases, described as adenoma sebaceum, were really instances of this disease of the Perry type. In J. C. White's ‡ case, a woman of forty-two, the lesions began on the face at the age of twenty-four. They were sparse then and numbered about fifty when White saw her, though they had continued to develop up to the age of forty-two. Some softened and were removed by caustics during the last ten years; three of them developed epithelioma. Bowen examined some of the lesions microscopically, and considered that they were identical with those of Fordyce's cases, but there were obvious clinical differences.

Wolters' § case was a woman of twenty, in whose right eyebrow was a yellowish-red-colored linseed-sized tumor, which had been present since birth. The diagnosis was made from the histology corresponding with Brooke's disease.

Elsching ‖ at Vienna showed two sisters, æt. twenty-six and twenty-nine, with numerous whitish-yellow flat pin's-head to lentil-sized neoplasms on the lower eyelids, which they from their histology considered as lympho-endotheliomata.

Jarisch's case was a man, æt. twenty-two, in whom the disease began at the age of eight. There were several ulcerated and crusted plaques situated about the orbits, and one near the nose, which looked like rodent ulcers. There were a few nodules and yellowish milium on the eyelids. Microscopically, Jarisch said they resembled Brooke's cases, but with such clinical differences it would be better to suspend judgment.

* Jamieson, *Brit. Jour. Derm.*, vol. v. (1893), p. 138.

† Rosenthal, Berlin Derm. Soc., reported in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1151.

‡ *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 477, with good photograph.

§ Wolters, *Archiv f. Derm. u. Syph.*, April and May, 1901, pp. 89 and 197.

‖ Elsching reported *Annales*, vol. ix. (1898), p. 1059.

W. Pick's* was in a man of forty-three, with a few (9) scattered lesions on the forehead and orbits.

Isadore Dyer's,† a man of fifty-five, in whom the disease began at eighteen on the left temple, and gradually increased on the face, neck, chest, and back, and were both grouped and scattered from a pin's head to a pea, and a few as large as half a nut; the newer ones were like white wax, the older violaceous.

Etiologically the disease shows heredity and family prevalence in a large proportion of the cases. The female sex predominates so largely that male cases should be carefully scrutinized before they are accepted as being of the Perry type, especially as those reported by Jarisch, Pick, and Dyer present important clinical differences.

Anatomy.—Brooke and Fordyce independently traced the growths from the epidermis epithelium, and consider them to be benign epitheliomata, while Jarisch and others have derived them from vascular or lymphatic endothelium, and would therefore class them as endotheliomata. Most subsequent observers, however, including Unna, who calls it an acanthoma, and Wolters, confirm Brooke and Fordyce.

Pathologically there is a general agreement that they are of embryonic origin.

Diagnosis.—These cases resemble either adenoma sebaceum when abundant, or sometimes colloid when limited to the orbits. The distribution and aggregation may be exactly like adenoma sebaceum, except on the forehead, where the growths are sparse in adenoma sebaceum, while in the other they are closely grouped for the most part; the color, chiefly due to telangiectases, is usually bright red in adenoma, while in epithelioma adenoides the growths are pale and even white, and if there are telangiectases, they are not nearly so numerous and do not give the ruddy coloration of adenoma. When they are on the orbit they may be yellowish and semi-transparent, and then are like colloid. In a few cases, chiefly when the growths are sparse, the microscope would have to decide the question. The following comparison may be made with lymphangioma tuberosum.

* In vol. lviii. (1901), p. 201, W. Pick records as adeno-epithelioma what he claims to be another case. He mixes up cases of adenoma sebaceum, colloid, etc., in his references.

† Isadore Dyer, *New Orleans Med. and Surg. Jour.*, March, 1898, p 530.

Lymphangioma Tuberosum Multiplex.	Epithelioma Adenoides Cysticum.
Mainly on the trunk, discrete and not grouped. Bilateral, but not symmetrical. Distinctly colored, except quite at the commencement. Scalp unaffected.	Mainly on the face, discrete but very closely grouped. Closely symmetrical. Almost or quite pearly white throughout, or a faint bluish or yellowish tinge. Scalp several times affected with large and numerous lesions.
Males and females equal.	Females largely predominate.
Not hereditary.	Most of them hereditary.
Anatomically. Cysts in the derma with straight processes of non-epidermic origin.	Solid coil-like masses with small cysts scattered through them, and of epidermic origin.

Resemblances.—Both begin in early life, both encroach to an extent on the other's domain of distribution, both have milium on and between the lesions, both probably are of embryonic origin, slowly progressive, and do not involute. The cases of each type closely resemble each other.

Prognosis.—In both lymphangioma tuberosum and epithelioma adenoides cysticum the tendency is to slowly increase in number and size. Spontaneous evolution cannot be expected.

Treatment.—Operative measures are the only means of removing the growths. Electrolysis may be used to destroy them if the growths are in small numbers, but when numerous, curetting is probably the best means of removal; but a fine Paquelin or galvano-cautery might be used.

In a face case Fordyce removed the majority of the larger tumors by the curette, and smaller one with a comedo-extractor. When the epidermis was broken, the tumors being loosely attached were readily extracted, leaving a slight scar.

Benign epitheliomata of different clinical characters are reported from time to time. One such, by myself, was published in the *Transactions of the Pathological Society* for 1899. The patient was a girl of ten, who had an aggregation of tumors single and compound, the single ones varying from a hemp seed to a pea, while the largest compound one occupied a square inch. They formed a vertical band an inch wide, extending from the middle of the right eyebrow to about an inch beyond the hair margin. The growths were soft to the touch, pale red, with a few vessels over the largest; they were neither tender nor pain-

ful. There was a doubtful history of a blow before the appearance of the growths, which began when she was between three and four years, and some of which were still growing slowly. While the general clinical features were benign, the microscopical characters suggested malignancy, and showed very active proliferation of the epithelial cells of the hair follicles and sweat ducts, but not of the sweat coils, sebaceous glands, or of the epidermis. The growths were probably of embryonic origin, as the hair follicles and sebaceous glands were imperfectly developed.

ADENOMA SEBACEUM.*

Synonyms.—Végétations vasculaires (Rayer); Nævi vasculaires et papillaires (Vidal). Nævi symétriques de la face (Hallopeau-Leredde).

Definition.—Neoplastic papules on the face, of congenital origin, but of later development.

Rayer and Addison and Gull related the first cases, but it was not generally identified until the above designation was given by Balzer, who was the first to redescribe the affection without knowing of the previous cases. The cases now known are too numerous to be specially mentioned. I have met with several, and I could easily find many more, by visiting the idiot asylums, in which most of the cases are confined. The affection is, therefore, not so rare as it was at first considered to be, as the majority pass unrecognized into the hands of the neurologist rather than those of the dermatologist.

The disease is practically confined to the face, occupying in the main the position of acne rosacea, *i. e.*, the middle two-thirds. It is most abundant along the sides of the nose and the

* *Literature.*—Author's Atlas, Plate LXXXVII. Rayer's Treatise, second edition; Willis' Trans., p. 996. cases clxxiv. and clxxv.; and Atlas, Plate XX., Fig. 1. Addison and Gull on Vitiligoidea, *Guy's Hospital Reports*, series ii., vol. vii. (1850), p. 267, and No. 262 model, Guy's Museum labeled "Lichen." Pringle, *Brit. Jour. Derm.*, vol. iii. (1891), p. 1, a good *résumé* of the subject, with colored plate, gives all the French cases. Caspary, *Archiv f. Derm. u. Syph.*, vol. xxiii. (1891), p. 371, with colored plate. Internat. Derm. Cong., Vienna, 1892—seven new cases by myself. There are several models in the St. Louis Museum.

naso-labial folds, where it is semi-confluent in most cases; it is least on the forehead, where the lesions are scattered sparsely and without any arrangement, and some of the largest papules are often found here. The chin and sides of the cheeks occupy an intermediate position as far as the number of the papules is concerned. Their distribution is remarkably symmetrical, as a rule, but one of my cases was strictly unilateral in the usual position, and another over the lower jaw and outer side of the right cheek, while in Gaucher and Lacapère's case the disease was limited to a score of papules on the left temple, which began at the age of forty-eight.

The lesions are roundish, convex papules, and most of them are from a millet to a hemp seed in size, but the extremes are a pin's point to a split pea. The majority of the lesions are of a bright crimson, from minute telangiectic vessels on and round them, but they may be quite colorless and slightly translucent, like little wax nodules, while on the forehead I have seen them of a brownish-red tint. They do not all pale on pressure, and the telangiectases vary much in extent, sometimes being almost absent, at others very abundant, in tufts and stars, and imparting a uniform red color. One of my cases corresponded to the last description, and Vidal's designation for the disease shows what a striking feature it was in his case. In my unilateral cases there was very little vascularity.

In one case the papules were so small and insignificant that, if it had not been for the telangiectases, they would have escaped my observation, the man having applied for a seborrheic eruption on the trunk; he was a bright, intelligent, healthy-looking man of twenty-six.

A few of the lesions may be present at birth, or appear in very early life, and the others either appear gradually, or at some period such as puberty, and take on marked activity as to numbers; but individually they do not much increase in size beyond the limits stated. Subsequently the majority show very little change, though a certain number may undergo involution, leaving faint atrophic scars, which may disappear altogether in time. A large proportion show other signs of a defective skin. Numerous small fibromata, or their empty tags of skin, such as are common in old people, are scattered about, especially on the neck, and the larger form may occur on the body. The tex-

ture of the skin is coarse, and groups of hair follicles on the back have round them an infiltration or fibrous thickening, so that they form colorless hemp-seed-sized papules, or coalesce into flat, fibrous-looking patches, dotted over with large comedones. One or more of these flat, fibromatous patches * is usually to be found on the side over the iliac crest, either on the right or left side. Warts, true nevi, and pigmentation are also to be met with.

Etiology.—The disease is of congenital origin, and all the marked cases show intellectual inferiority, a large proportion being chronic epileptics or imbeciles, and it is not uncommon in idiot asylums. Slight developments may occur apart from such conditions. One of my cases was an intelligent lady, æt. forty-eight, and another, æt. twenty-three; a third was a man of twenty-six; a fourth was a boy of eleven, above the intellectual average of his age and class. This boy had only a few papules, which had slowly developed for two years. One of the ladies had had one papule all her life, while the others had gradually developed; so that the slight cases are of later development than the others. Nearly all cases occur among the poor.

Pathology.—The disease is presumably an error of development in the shape of a congenital overgrowth of an adenomatous character, developing from embryonic remnants in the skin, but in my experience affecting all the appendages, and therefore really a pilo-sebaceous hidradenoma.

Anatomy.—This has been investigated by Balzer, Pringle, Caspary, and myself. Balzer found adenoid changes in one case in the sebaceous glands only; in the other, both in the sweat and sebaceous glands, he also found numerous small cysts. Pringle found adenoid changes in the sebaceous glands only, and no cysts. I examined portions of skin from the cheeks, forchead, and the fibrous lesions of the back. In the cheek lesions (Fig. 55), there was not the interpapillary growth Pringle found. The corium was much thickened, and the most conspicuous feature was the enormous number and size of the sebaceous glands, both single and compound; but the upper half of the corium was also studded with rudimentary hair follicles, while there was also an usually large number of sweat coils in the deeper portion, so that there was increased development of all the appendages of the skin situated at different levels. The papillary vessels were conspicuous, and there was moderate increase of the connective tissue. In the single large lesion from the forehead, which

* These follicular fibromata are figured in the plate referred to in my Atlas.

clinically looked so different, the most striking distinction was the replacement of the enormous numbers of the hair follicles and sebaceous glands by fibrous tissue, of which the greater portion of the tumor consisted, with fragments of hairs and glands imbedded in it. The lesions of the back were seated at the hair follicles, round which dense fibrous tissue was developed in considerable quantity, the lesions being in short follicular fibromata.

Diagnosis.—The most striking features are the occurrence of neoplastic, small, convex, telangiectic, deep-red nodules, semi-confluent, as a rule, along the naso-labial folds and the rest

Fig. 55.—Adenoma sebaceum from cheek. × 2-in. Powell, 2-in. ocul.

a, rudimentary hair follicles; *b*, sebaceous glands, large and numerous. Sweat coils are also present in abundance, but do not show with so low a power.

discrete, but for the most part limited to the middle two-thirds of the face. They commence early in life, increase slowly in number and size, and there are generally other congenital defects of mind and body. The diseases mostly resembling it are epithelioma adenoides cysticum, colloid milium, and acne rosacea.

Epithelioma adenoides cysticum is also of congenital origin, but the lesions tend to form irregular groups on the face, including the forehead, and the trunk may also be affected. The lesions

are not telangiectatic, and intellectual defects are not the usual concomitants.

The two diseases resemble each other in both attacking the face, in both being probably of embryonic origin, and in their slow evolution and stationary behavior after development. Indeed, it would not be surprising if both these affections turn out to be slightly different clinical expressions of the same pathological process, a view which W. Pick * has also put forward quite recently.

Colloid milium occupies the frontal and orbital regions. In adenoma sebaceum the lower half of the face is chiefly affected. Colloid milium nodules are not very numerous, and of a transparent yellow appearance. Adenoma nodules are very numerous, usually some shade of red, but occasionally white, and less translucent than colloid. Telangiectases are not a feature of the colloid, but are nearly always a very marked feature of the adenoma affection.

From *acne rosacea*, the history of early development, the slow evolution and persistence of adenoma, absence of tendency to suppurate, and independence of digestive disturbance and stationary behavior, would be sufficient.

The idea of *disseminated nodular lupus* could only arise in the most telangiectatic cases of adenoma. Disseminated discrete nodules of lupus are as rare as adenoma sebaceum; the brownish-red color of lupus is not in any way due to telangiectatic vessels; lupus nodules are not very numerous, not limited to any part of the face, and may even come elsewhere. Some of them grow to a much larger size than the largest adenoma nodule, and there is a decided tendency to undergo involution in the center while spreading peripherally. It produces also decided scars. Darier showed a case to the French Dermatological Society of "vascular and warty nevi," which was only distinguishable from adenoma sebaceum by microscopical examination, which showed vascular, but no sebaceous changes.

Prognosis.—The tendency is for the lesions to slowly increase in number, but not much in size. Involution has occurred in some lesions, but permanency is the most constant feature.

* "Ueber das Epithelioma Adenoides Cysticum (Brooke) und seine Beziehung zum Adenom der Talgdrüsen Adeno-Epitheliom." Walther Pick, *Archiv f. Derm. u. Syph.*, vol. lviii. (1901), p. 201, illustrated.

Treatment.—No internal or external medicament has the slightest effect upon them, and the only thing, therefore, is to remove them by surgical means. Hallopeau removed some of the growths by the curette and by scarification, but a year later some had recurred. Pringle tried to scoop or to bore out some of the nodules, but not very satisfactorily, on account of their depth. In the case of the lady, where the number of papules was not large, I successfully removed them by electrolysis, exactly in the same way as in occluding telangiectatic vessels; the needle attached to the negative pole was introduced once for the small nodules, and several times for the larger, a current of three or four milliampères being employed. In a very extensive case I excised a portion of the naso-labial fold, which was very prominent on each side, and also large lesions on the forehead, and obtained primary union; the rest was vigorously scraped with a curette, the nodules being very resistant. Great improvement was effected, but several operations would have been necessary for anything like a complete removal of the lesions.

CARCINOMA CUTIS.

Cancer of the skin occurs in two varieties of scirrhus, the lenticular and tuberose, both of which are nearly always secondary to cancer of the breast; melanotic cancer of the skin was formerly described; then the general view was that it was really sarcomatous, but Chambard * (1879), J. Hutchinson, Jr.† (1893), and Unna (1894) brought forward evidence that the old view was the correct one in a large number of cases, and Unna ‡ stated that all pigmented cancers of mole origin were of the alveolar variety. A pigmented alveolar cancer of the lip of doubtful origin is recorded by Mott. Gilchrist also confirms these views. Whitehead records a case in which the tumor

* *Lancet*, October 4, 1879. Annotation on Chambard's Article in *Archives de Physiologie*, Mott, *Path. Trans.*, vol. xxxvii. (1886), p. 475, but he could not then feel sure it was carcinoma. Gilchrist, *Amer. Jour. Cut. Dis.*, vol. xvii. (1899), p. 117, many references; and Whitehead, abs. *loc. cit.*, vol. xix. (1901), p. 149.

† Hutchinson, Jr., *Path. Trans.*, vol. xliv. (1893), p. 148.

‡ Unna, *Berliner klin. Wochensch.*, 1893, Abs. *Brit. Jour. Derm.*, vol. v. (1894), p. 318.

arose from an unpigmented mole, and was of the same structure as a melanotic cancer, but with no pigment. Epithelioma and its congeners, rodent ulcer and Paget's disease, are far more common and characteristically cancers of the skin. The first three forms concern the general surgeon more than the dermatologist, and require here only a brief notice.

Carcinoma Lenticulare * is the most common form of cutaneous scirrhus. It begins as small, shot-sized, flattish red papules, which enlarge to the size of a pea, bean, or even filbert, most of them projecting more or less above the surface, while others are subcutaneous. They are generally seated on a red or violaceous surface, which may be traversed by dilated vessels, and the skin is hard, smooth, and glistening. This induration has a border well defined to the touch, may extend over the whole or greater part of the thorax and abdomen, interfering with deep inspiration, like sclerodermia, and constituting the "cancer en cuirasse" of Velpeau. The lymphatic circulation of the whole region is interfered with, lymphatic vesicles with copious clear fluid discharge are often present, the glands enlarge, and the limb adjoining becomes much swollen, preventing free movement. There may be severe lancinating pains, or only itching and burning, at all events at first. In Morris' case the disease commenced as diffuse hardness in the skin of the breast above the right nipple, and rapidly spread over the chest, the lymphatics standing out like radiating cords from the nipple; nodules appeared later. There was very little pain the first six months, but before her end, eight months from the onset, it was very great. As the nodules increase in number and size they coalesce into large irregular masses, which sooner or later break down, ulcerate, and fungate, sometimes bleeding profusely. The patient becomes cachectic, wastes, and dies ex-

* "Lymphatic Infiltration of the Skin in Carcinoma of the Breast," J. Poland, *Lancet*, vol. ii. (1885), p. 338. A well-marked instance is published, with plates and histology, by Morrow and Robinson, in *Amer. Jour. Cut. and Ven. Dis.*, vol. ii. (1884), p. 1; and two cases with histology and most of bibliography to date by Nevins Hyde in the *Amer. Jour. Med. Sciences*, March, 1892. Dubreuilh in 1889 published a case at Bordeaux. Hutchinson in 1891, *Amer. Jour. Cut. Dis.*, vol. ix. p. 181. Kaposi showed a case at the Derm. Cong. in 1892, and Morris another at the Derm. Soc. of London, November 13, 1895.

hausted, or is hurried off by internal metastatic deposits or intercurrent inflammation. In Morrow's case, beside the characteristic papules and nodules, there was a multitude of milium-like bodies, the size and shape of wheat grains, and consisting of masses of epithelium, which at the periphery were vitally active, and in the center, fattily degenerating, and on pressure shelled out readily like comedones. They were abundant nearly all over the front of the trunk and in some regions of the back, and were the first change noticed by the patient, and "the most characteristic feature of the advancing part of the disease."

These cancers are, as far as the skin is concerned, according to Unna and others, epithelial infarctions of the lymph tract, and not endothelial cancers. There is no essential difference between the so-called primary cases and those secondary to the breast, except that the primary are rarer and have a more superficial origin. Carless showed two cases at the Dermatological Society, secondary to cancer of the breast after removal, on December 14, 1898. In one the process was commencing apparently as an erythema, spreading from the side operated on to the sound one; the red was not uniform, but somewhat in streaks. There was superficial induration to the touch, but no pain or tenderness.

In the second there was recurrence of the cancer in the cicatrix, and from this there had spread a diffuse induration with well-defined red border and pale center, in which nodules could be felt. There were red papulo-vesicles in a band over the left nipple, from which lymph often flowed. The first patient was ruddy and plump and fifty-two years of age. The second was emaciated, the disease being much farther advanced.

Carcinoma Tuberosum is rarer than lenticular. As the name indicates, the nodules are larger than the preceding variety, and may be of any size up to a hen's egg. At first deeply imbedded in the subcutaneous tissues and deep part of the corium, where they may be felt as very hard lumps, they gradually grow towards the surface, and the skin over them becomes tense and red, often with a brownish or bluish hue. They are often very numerous, scattered or aggregated into irregularly nodulated masses, and all tend to soften and break down into foul and painful fungating ulcers, which speedily exhaust the patient.

One of the worst cases of this kind, where the disease was primary in the skin, is reported by Röseler.* The nodules appeared suddenly, almost all through the panniculus adiposus, in a woman of fifty, increased rapidly in number and extent, until the whole body surface was covered with tumors from a pea to an egg in size, over which the skin was at first stretched, and red, and then groups of yellow vesicles formed; then they all broke down into ulcers almost simultaneously, within six months from the onset, the patient sinking seven weeks later. There was no internal growth that could have been the starting-point. Korowin reported a case which began as a small-celled medullary carcinoma of the scalp and rapidly generalized in the lungs and skin; on the latter were two hundred nodules, some of which broke down and were indistinguishable from syphilitic rupia.

Treatment for either form is unavailing. Euthanasia is all that can be aimed at.

EPITHELIOMA.†

Synonyms.—Epithelial cancer; Cancroid; Carcinoma epitheliale; *Fr.*, Epithéliome; Cancroïde; *Ger.*, Epithelialkrebs.

Definition.—A malignant ulcerating new growth of the skin and mucous membranes, characterized by the development of heterologous epithelium in the corium and subcutaneous tissues.

Epithelioma begins in most instances at the border of the mucous membranes and the skin, such as the lower lip. It may also begin on the mucous membrane only, as on the tongue, or on the free surface of the skin. It is with the disease, as manifested in the first and the last position, that we have chiefly to do.

* Virchow's *Archiv*, vol. lxxii., p. 372, with plates.

† *Literature.*—Author's Atlas, Plate LXXVI., Figs. 4, 5, 6, 7. Paget's lectures on "Surgical Pathology," third ed., 1870, p. 700—the best clinical account in the English Language, to which I am much indebted. Cornil and Ranvier's "Manual of Pathology," English ed., 1882, vol. i. p. 257. "Cancerous Affections of the Skin," Thin, 1886. "Der Epithelialkrebs," Carl Thiersch, 1865. Sebert among older writers; and Fabre Domergue (Paris: 1893), "Les Cancers Epithéliaux," and Unna's "Histopathology" for his special views may be consulted.

There are three clinical varieties: (1) the discoid, (2) the papillary (both superficial), and (3) the deep-seated and infiltrating. These differ in clinical aspect, mode of development, and course, though the process is essentially the same in all, and the primary growth is almost invariably single. In the superficial form the disease affects pretty uniformly all the tissues of the skin; in the papillary the papillæ are the parts chiefly affected, while in the deep-seated the deep part of the corium and subcutaneous tissues are the primary seats of the disease. These distinctions only hold good for the early stages of the disease, before ulceration has taken place, as the superficial tends to get deep eventually. The disease may begin on apparently healthy skin, on the site of a scratch or other injury, or on previously diseased tissue.

The primary epithelioma is usually single, but given the same kind of local irritation in more than one spot, or the same kind of antecedent lesion being multiple, and the epithelioma may also be multiple. In a patient of my own, a woman, æt. forty-six, epithelioma developed in the upper part of the chest and in the groin, in fungating nodules as big as a walnut. There was also a patch like a crusted lupus, which also turned out to be epitheliomatous. The glands in the axilla and groin were also cancerous. All the growths had developed on patches of lupus verrucosus, of which she had several besides those which had become cancerous. Recurrence took place a year later in the axillary one, which was again removed, but a year later she died from generalization in internal organs.

A surgeon, æt. thirty-nine, whom I saw in 1895, had from the age of twenty-four been subject to small warts on the scalp, palms, and soles; a large crop came at once, and the others at various times. Several of these warts became epitheliomatous, and were removed at different times, and were pronounced by experienced pathologists to be epitheliomatous. I removed one from near the anus and several of the warts.

Dubreuilh * had a case of multiple epitheliomata of different type. Multiple epitheliomata are not uncommon, also, in xeroderma pigmentosa, but they are of a special type. In secondary epithelioma there is no limit to the number of nodules; thus in

* *Archives Cliniques de Bordeaux*, 1894, p. 333.

Finlay's * case, where the skin lesions were secondary to epithelioma of the stomach, there were scores of nodules on the trunk and limbs.

Symptoms.—**Superficial Discoid.** Ill-defined papules or nodules covered with fine scales, continually renewed after removal, make their appearance, and when laid bare, look like bright red granulations. These gradually enlarge peripherally and vertically, and coalesce into a superficial, hard, round or oval, irregularly surfaced disc, of varying size, sharply defined at the border, which may be abrupt or sloping. The whole is movable with the skin at first, but afterwards becomes adherent to the subjacent tissues, and eventually, though it may be months or years, breaks down into ulceration. Sometimes the initial papular stage may be missed or unobserved, the disease apparently commencing as a fissure in the skin, and oozing with a thin fluid, which dries into a crust of a yellowish-green or black color. In these forms the disease is limited to the corium for a long time.

The **Superficial Papillary Epithelioma** is most common on mucous membranes, especially those of the genitalia, on the scrotum and extremities, and often begins on a mole, wart, or other simple papilloma. A soft growth becomes indurated, the component papillæ enlarge, and their epithelium proliferates both within and without. The papillomatous composition becomes more and more evident, especially if the surface epithelium is washed away, and the papillæ project considerably above the surface, and take various forms, cauliflower, fungiform, cylindrical, conical, and pyriform, according to the relative proportion of the base and apex of the growth, and the mode of grouping of the component parts. They are highly vascular, bleed easily, and are of a bright, florid color, thinly coated with opaque white cuticle, if in a moist position. Sometimes this form develops on the previously described plaque or nodule before, or subsequent to, its ulceration. Both the papillary and discoid forms spread both laterally and vertically, but for a long time the firm fibrous tissue of the deep part of the corium may resist the downward extension, and the lateral growth is thus the predominating one. This may be very slow until ulceration sets in, which it inevitably does, generally before the

* *Path. Trans.*, vol. xxxiv. (1883), p. 102, with plates.

patient comes under notice, commencing in the plaques as a diffuse excoriation, extending up to, but not destroying, the border of the growth, or from a fissure or wound in which the disease commenced. The discharge dries into a scab or dark crust, beneath and beyond which the ulceration extends.

In the papillary form the center breaks down first, and extends in all directions, but the new growth more than compensates for the advancing destruction. The resulting ulcer is generally characteristic; it is roundish, oval, or elongated, with uneven outline. The base and border are hard, and the latter is everted or undermined, and purplish-red, the thickness of the infiltrated part varying from one-twelfth to half an inch, in proportion to the extent of the ulcer. The granulations are small, bleed easily, are situated on a convex, irregular floor, and exude a thin, serous, peculiarly offensive discharge, which, unless in a moist situation, dries into a crust, and is speedily renewed after removal. This ulcer may be quite superficial, "cropping the papillary layer" only, as Wilson puts it, and even healing in the center, while it spreads peripherally. Eventually, however, the cancerous epithelium invades the deep layers; and when once the fibrous barrier is penetrated, the malignant process proceeds comparatively rapidly through the fat, fascia, muscles, and even the bones, implicating the neighboring lymphatic glands, which enlarge into hard nodules, and then coalesce into large nodulated masses, which soften in the center, the skin over them becomes livid often with superficial pustules, gives way, and deep foul ulcers are produced; the next series of glands gets involved, and in rare instances, the viscera, the lungs, liver, and even heart; the patient becomes cachectic, and soon dies, exhausted by the pain and discharge, or from some intercurrent malady. The whole disease lasts, on an average, four years when it is on the skin, the course being much slower in the superficial than in the deep form. The sensory symptoms which accompany these tumors and ulcers vary much. Sometimes they produce scarcely any inconvenience, at all events until ulceration has set in; or there may be stinging, pricking, or burning; but more frequently there is a dull aching, with exacerbations; or again, it may be severe and lancinating. The suffering is naturally much greater when it is about the mouth or anus.

Deep-seated Epithelioma represents at an early period the condition only attained to at a later stage in the superficial form, and since its course, therefore, is much shorter, and more serious altogether, it is fortunately much rarer than the other forms. It is most common in the tongue and submucous tissues, but occurs also in the subcutaneous tissues, while the skin or mucous membrane over it is perfectly healthy at first. A good example, depicting the disease in the skin, is related by Paget. "A gentleman, æt. sixty-four, had a tuberculated growth of ten weeks' duration on the side of the nose an inch in diameter, and gradually elevated up to about two lines above the surface; the skin over it was thin, adherent, and florid, with dilated vessels; the base of the growth rested on the bones, and involved the whole of the tissues to the periosteum, but was movable *en masse;* in the middle and most prominent part was a fissure nearly a line in depth, with black, dry borders, from which a very slight discharge issued." It was very painful, and, from the history, probably began in a small sebaceous cyst. The patient was well ten years after its removal.

Sometimes the surface and deep tissues are simultaneously involved, but the deep parts are always most affected, and then form "a roundish, firm, or hard and elastic lump," but very little raised above the surface, on some part of which is a fissure, ulcer, or cancerously affected skin (Paget). The mode in which this form begins to ulcerate is thus described by Paget: "Either the skin over the tumor becomes adherent, thins, and cracks, the fissure for some time remaining dry and dark, while the ulceration is extending below, or the central part softens, suppurates, or even sloughs through a comparatively small opening, while ulceration spreads laterally from the cavity; or, in secondary growths and under old scars, the cancer fungates through a sharply defined ulcer."

The positions for epithelioma are, according to Paget, in the order of frequency—the lower lip fifty per cent. or more, the tongue and external genitalia of both sexes, more rarely at the anus, interior of the cheeks, the upper lip, palate, larynx, pharynx, and cardia, the neck and os uteri, the rectum, bladder, perineum, extremities, face, head, and trunk. Thiersch gives, in 102 cases, 78 on the face, of which only 48 were on the lower lip. Roger Williams collected 329 epitheliomas of the lip from some

of the London hospitals, and all except three were on the lower lip and in men. Epithelioma of the upper lip, therefore, is very rare, but there are many cases scattered through literature, and Eschweiler collected no less than 66 cases. When it does occur, although actually there are more males than females, it is only as 3 : 2. It is also said to affect the left side oftener than the right. Certain occupations or customs may, however, modify the usual proportion; thus, in workers with paraffin, and chimney sweeps, it is abnormally common on the scrotum (**chimney-sweep's cancer** *); and it is common on the thighs in the inhabitants of Northern India, commencing in the cicatrices of burns, produced by their custom of warming themselves over pots of hot ashes (T. Maxwell).

Etiology.—Five out of six cases are males, and the great majority occur after the age of forty; it is rare under thirty, but soot cancer has been seen in children of eight years old, and Lébert † records a case of cancroid in a child of eight and a half, in whom it was almost congenital, and Selberg ‡ a case at six months old. Heredity accounts for a small number only, about five per cent. The most potent factor as an exciting cause is long-continued irritation, though occasionally a single injury has been followed by it. It is thus that its preponderance in men, and on the lower lip, is accounted for, from the prevalence of smoking, even some of the few women victims having been smokers. Next to this, as starting-points, or predisposing conditions, are certain neoplasms, especially senile warts, horns, and other forms of papillary hypertrophy and horny thickening, such as may be seen in arsenical keratosis of the palm and sole (Hutchinson, A. Lane, and Hartzell).§ Other benign growths which may take on this form of malignancy are the so-called ichthyosis and leukoplakia linguæ, moles and vascular nevi, adenomata, long-standing ulcers, such as are

*See Butlin's "Lectures on Cancer of the Scrotum," *Brit. Med. Jour.*, vols. i. and ii., 1892, for a full account of the subject.

† Roger Williams, *Brit. Med. Jour.*, October 15, 1898, quotes several cases from eight years and upward.

‡ Selberg, Virchow's *Archiv*, vol. cxlv., p. 176 with references. The patient was a boy, and had a walnut-sized nodular ulcerating tumor on the right shoulder. It began as a red point when he was four weeks old.

§ "Epithelioma as a Sequel of Psoriasis," etc., *Amer. Jour. Med. Sciences*, September, 1899.

due to lupus vulgaris, erythematosus, or syphilis, and the atrophic skin or scars produced by those diseases, by xerodermia pigmentosa, and by burns, which are particularly frequently the prey of the papillary form. Under the name of **Lentigo melanosis,** Hutchinson * has drawn attention to the development of epithelioma of the eyelid on persistent pigment patches, which are occasionally seen on the face, chiefly the orbit of old people, and have formed from an aggregation of lentigines, also from the melanotic whitlow, though the growth then is more frequently a sarcoma. In a case of Sheild's a mole was accidentally burned and a brownish discoloration spread all round it; after twelve years melanotic epithelioma developed. Galezowski has also reported a case of pigmented epithelioma from a mole on the eyelid. Sheild † also has published a good example of multiple cancer in the condition called by Unna "sailor skin," in which the lesions of exposure to weather severities become the seat of epithelioma.

Pathology.—The essence of the epitheliomatous process is the development of epithelium, and its infiltration into the deeper tissues, where it does not normally exist, and where its presence produces irritation and consequent inflammatory changes.

There are two classes of epithelioma, the pavement and cylindrical-celled; the latter affects only internal organs, such as the intestines, and need not be discussed here. Pavement epithelioma is divided by Cornil and Ranvier into the lobulated, the tubular, and the pearly; the first two only require consideration, the pearly form being a benign tumor.

Lobulated Epithelioma is the common form and type of the disease, and, as its name indicates, is composed of lobules. In a vertical section of a single lobule the component cells are seen to undergo the same changes, from the periphery to the center, as the normal epidermis does, from the lowest cells of the rete to the surface. On the outermost layer of the lobule, the cells are cylindrical (palisade cells); internal to this, they are polygonal and dentate (prickle cells); while in the center they are cornified and stratified, but, owing to their position, are compressed into lobes, with concentric layers like an onion ("bird's-nest bodies"), in the center of which multi-nucleated and colloid cells are sometimes found. The lobules are separated by a stroma supporting the vessels,

* *Archives of Surgery*, vol. iii. (1892), p. 319, "Lentigo Melanosis," and sequel, vol. v (1894), p. 253, with colored Plate CVI. Dubreuilh and others have since published cases as Lentigo Maligna Senilis.

† *Lancet*, January 7, 1899, p. 22, with colored illustrations.

which never penetrate into the lobules. Both stroma and cells vary in composition and structure; the stroma may vary both in vascularity and density, and be either embryonic, mucoid, or fasciculated—*i. e.*, adult connective tissue—or all three together, in varying proportions; the cells may be colloid, horny, occasionally melanotic,* but seldom mixed in the same tumor. There is, however, another process, of an inflammatory kind, produced by the irritating influence of the cancerous epithelium on the tissues; the stroma between the lobules and the tissues immediately surrounding the advancing epithelium is infiltrated with round cells, most, if not all, inmigrant cells; these cells separate and break up the fibers of connective tissue, and the tumor may disintegrate or slough from obliteration of the vessels, either by endarteritis, or by pressure on them by the epithelial lobules and leukocytes.

Lobulated epithelioma is developed from the epidermis of the skin or mucous membranes, or from the new embryonic tissue near it; whether it is by proliferation of the epithelial cells, or, as Rindfleisch thinks, by the influence of such cells on those of the connective tissue in the neighborhood, is a matter of dispute, but, on the whole, the balance of evidence is in favor of the first view. At all events, the result is a great downgrowth of the interpapillary processes of the rete, and secondary processes bud off from these laterally, as well as terminally, and becoming detached appear as isolated epithelial masses, often in globes in the corium and deeper tissues, so that it is at this stage again possible to recognize their point of departure. Buds may also come off from the hair follicles, and Cornil and Ranvier think from the sebaceous glands also, the cells increasing from the periphery to the center, pushing the fat cells to the center, and finally extruding them; Thin, however, doubts this, though, *a priori*, it seems probable enough. In the sweat glands, by a similar process, solid cylinders of epithelium are formed, which send out buds in the adjacent embryonic tissue, and unite into a network; some of these cylinders, which consist of small pavement cells, enlarge, and, by continued multiplication of the cells, which also become larger toward the center, "bird's-nest bodies" are ultimately formed from these also, and get separated like those from the rete. When this development from the sweat glands is primary, and stops short of the first stage of the process described in the development of the cylinders from sweat glands, *i. e.*, does not go on to epidermic evolution, we have **tubular epithelioma**, the surrounding stroma being embryonic mucous or fibrous tissue; these tumors are less malignant in the skin than in the lobulated form, though sometimes they relapse or extend to the lymphatic glands, and cannot, therefore, represent rodent ulcer.

Unna divides cancers of the skin according to their general structural characters, into: 1. Fungating; 2. Cylindrical; and 3. Alveolar.

* Paget, *loc. cit.*, p. 722, a case in which the disease began in a pigmented mole.

The term cylindrical of group 2 does not correspond with cylindrical-celled cancers, but refers to the grouping of the cells into cylinders. He makes several subdivisions of these main groups. His views are original, and founded on the careful examination of seventy cases, and are therefore deserving of consideration, but are too elaborate to be discussed here, and the student must refer to his "Histopathology." The usually accepted views are here given.

Diagnosis.—The most characteristic features, when it usually comes under notice, are those of a chronic, painful ulcer, most frequently on the lower lip, with indurated, everted, or undermined edges; and sooner or later, secondary implication of the neighboring lymphatic glands. The lesions of rodent ulcer, syphilis, lupus, acuminate warts, and rhinoscleroma, are the diseases from which it has to be distinguished.

The distinctions from *rodent ulcer* are mainly clinical, and are given under that disease.

From *syphilitic nodules and gummatous ulceration.*—The lesions of syphilis are much more rapid in their course, and often painless; there is no hardness or new growth round the ulcers, which are generally multiple, sharp-edged, and punched out; and the pus is abundant and yellowish, while that of cancer is scanty, viscid, and sanious. In rare instances iodid of potassium may be given to decide a doubtful case, but it must be remembered that true epitheliomata may get smaller from the absorption of inflammatory products under iodids, but they never disappear.

Epithelioma may be distinguished from a *chancre* on the penis or lip by the history and duration of the lesion, which will be short in the case of a chancre, as compared with the cancerous ulcer.

In *lupus vulgaris* the lesions are more often multiple, and more likely to begin in childhood, or at least in young persons. There is an absence of induration, while there are nearly always some of the characteristic, soft, brownish, semi-translucent nodules near the ulcer; the pus also is more abundant, and not bloody or offensive. The possibility of epithelioma being grafted on an old lupus must be borne in mind.

Since epithelioma so often starts from a *wart*, it is important to recognize the change as early as possible. If a wart, which

has previously been quiescent, becomes uneasy or painful, begins to grow and bleed, or becomes indurated at the base, in a person past middle life, it should at once be removed.

Prognosis.—This is always unfavorable unless complete removal can be effected at an early stage, but is much more so in some cases than others.

The unfavorable circumstances are: the advanced age of the patient, the tumor being situated on mucous membranes, or other places unfavorable for complete removal; if on the skin, its being deep-seated, and secondary growths in lymphatic glands or elsewhere, the course having been unusually rapid. Favorable conditions are: the patient being still in the prime of life, short duration of the tumor, moderate infiltration, the growth being superficial, its being away from mucous membranes, ulceration being slight and superficial, and the absence of secondary implication of the glands. As to the course, it may in the deep-seated be fatal in two years, or in three or four; in the superficial it may go on for several years, until the ulceration begins to penetrate into the deeper tissues, when its downward progress becomes more rapid, and the same as that of the deep-seated variety. The tubular variety is nearly always very slow, but it is impossible to distinguish it clinically.

Treatment.—Removal, speedy and complete, is the only safe course to pursue. This may be effected by the knife, caustics, galvano-cautery écraseur, or actual cautery, according as the cancer is superficial or deep, and to the condition of the tissues round. Whatever is done should be done thoroughly, and even the apparently sound tissues immediately round should also be removed. Caustics are only suitable for the superficial form; the solid potassa fusa may be bored into the tissue in and round the growth, neutralizing any excess of the potash by dilute acetic acid; the pain is of comparatively short duration.* A. R. Robinson of New York is a very great advocate for this. Other caustics are chlorid of zinc, Vienna or arsenic paste, according to the formulæ at the end, and Kaposi recommends pyrogallic acid ʒij to ʒj of lard. Chlorate of potash, resorcin, acetic acid, fuming acid, nitrate of mercury, methylene blue, pyoktannin, lactic acid, etc., have advocates, but whatever is used should be applied so as to remove the entire growth, a superficial

* *International Journal of Surgery*, July, 1892.

action being worse than useless. All of them, in my opinion, are far inferior to the knife, and should only be used where the patient refuses an operation, or for some other reason it is impossible to excise the growth. The galvano-cautery écraseur is sometimes useful when the growth cannot well be reached by the knife, as occasionally in eyelid growths, but it is not now used for the tongue, as septicemia so often followed.

Scraping with the sharp spoon is still practiced by a few on the superficial growths, but in my opinion cannot be too strongly condemned where excision is possible; it is not only very likely to fail, but recurrence is speedy and aggravated. Unless the removal can go well beyond the disease, recurrence is always only too likely to occur, but hopes of eradication may be entertained, if this can be effectually dealt with as soon as it makes its appearance.

Lassar * has brought forward three cases of epithelioma which had healed soundly under the administration of five-drop doses of liquor arsenicalis three times a day. There would be no harm in trying it in inoperable cases, or in the early stage when the case could be watched, so that if the growth was not arrested excision could be resorted to. Stoker recommends his method of oxygen constantly applied to the growth. While I should not waste valuable time in an operable case, it has appeared to relieve pain, and may therefore be used in inoperable cases. The Röntgen rays may also be used, but these are more applicable to rodent ulcers, under which the procedure is described.

PAGET'S DISEASE OF THE NIPPLE.†

Synonym.—Malignant papillary dermatitis (Thin).

Symptoms.—This affection was first described by Paget in 1874, from fifteen cases. While at the onset it resembles a simple inflammation, before very long it develops into scirrhous

* *Berlin klin. Wochensch.*, 1893, p. 537. Abs. *Annales Derm. et de Syph.*, vol. v. (1894), p. 255.

† *Literature—St. Bart.'s Hosp. Rep.* 1874, p. 83, the best clinical account. For histology, Butlin, *Med. Chir. Trans.*, vol. lix., p. 108, and vol. lx., p. 153. Thin, Med. Chir. Soc., 1880, and *Brit Med. Jour.*, May 14, 1881. Duhring and Wile, *Amer Jour. Med. Sciences*, July, 1884, with a good summary of previous observations. "Maladie de Paget."

cancer of the whole breast. It is generally limited to the nipple and areola, but in Jamieson's case extended all over the breast and axillary region, and was nearly as extensive in G. T. Elliot's case. It occurs in women from forty to sixty years, and has been compared to an eczema, having, as Paget describes it, "a florid, intensely red, raw surface, very finely granular, as if the whole thickness of the epidermis had been removed. From such a surface, on the whole or greater part of the nipple and areola, there is always a copious, clear, yellowish, viscid exudation." The border is sharply defined, and even slightly raised, and very soon, if not at the very first, there is marked induration of the tissues, about a line in thickness, which feels, as H. Morris expressed it, "like a penny felt through a cloth." It is accompanied by tingling, itching, and burning, but with no disturbance of the general health.

In a case of mine, in a very early stage, the site of the nipple was in a condition of excoriation, partially covered with a thin crust, which when detached left a shallow raw surface; the border was well defined, and when the diseased area was pinched up, very distinct but superficial induration could be felt. The nipple itself had disappeared. The condition had been developing two years, but there was no actual sign of cancer. Sheild's case * was the opposite of this, the superficial ulceration measuring 11 by 10 1-2 inches. It had been present six years, and although fungating in one part, the glands were not enlarged.

In Paget's fifteen cases, all within a year or two developed scirrhus of the breast, one of the first signs being retraction of the nipple. There is, however, no doubt that the apparently inflammatory condition may exist for several years before it becomes recognizably cancerous; in H. Morris' case it was six years, in Duhring's case ten years, and in Jamieson's twenty years.

I have met with a precisely similar condition on the scrotum †

by L. Wickham, "Thèse de Paris," 1890 (G. Masson, publisher)—an excellent monograph, with colored plates, setting forth the psorosperm theory and giving the bibliography. Jamieson, 3d ed., p. 537. G. T. Elliot, "Paget's Disease treated with Fuchsin," *Amer. Jour. Cut. and Gen.-Ur., Dis.*, vol. x. (1892), p. 272.

* Author's Atlas, Plate IX., Fig. 3, early stage. Plate LXXVI., Fig. 8, late stage in scrotum.

† The case is published, with colored plate and histology, in *Path. Soc.*

of a man, æt. forty-seven. After remaining as a raw surface for two years, nodules developed in the center of the ulcer. Pick has seen it on the glans penis, and Sheild * had a case affecting the skin over the pubes. Neisser, Pospelow, and Tarnowsky have also met with it in the penis and scrotum, Winfield and Dubreuilh † have observed it on the vulva, and Darier and Couillaud on the arms and perineum.

Pathology.—The important point to decide is, whether the in-

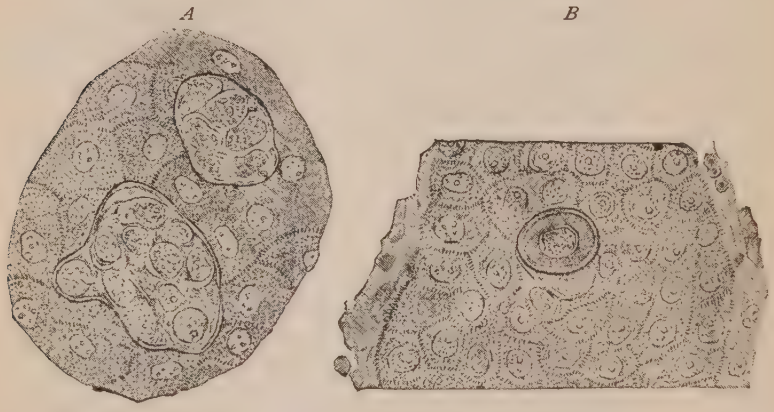


Fig. 56.—Pseudo-psorosperms in my case of Paget's disease of the scrotom (after Wickham.)

A. Two pseudo-psorosperms very highly magnified in the rete mucosum.

B. A single psuedo-psorosperm, highly magnified, in the middle, of an interpapillary process of the epidermis.

flammation is at first of a simple kind, or whether it has the impress of cancer upon it from the onset.

Thin, who has made very careful microscopical observations on four cases, believes that they demonstrate that it is cancer from the outset, hence the name he proposes; but in none of his

Trans., vol. xl. (1889), p. 187. Pick's case is reported in *Deutsch. med Zeitung*, November 5, 1891; pseudo-coccidia were found in the epithelium,

*Both of Sheild's cases are reported by Rolleston and Hunt with microscopical examination under Dermatitis Maligna, in *Path. Soc. Trans.*, vol. xlviii. (1897), p. 211.

† *Brit. Jour. Derm.*, vol. xiii. (1901), p. 407. Dubreuilh mentions nearly all previous cases.

cases was the disease in an early stage. The clinical facts are opposed to this, as it is difficult to believe that a cancerous disease would continue for ten and even twenty years, in some cases, before the cancerous nature declared itself in the whole gland. Comparison has been aptly made with the chronic surface inflammations of the tongue in syphilitics, and the so-called ichthyosis linguæ, in which epithelioma so often develops, though only after the irritation has lasted for many years.

Darier's * discovery of psorosperm-like bodies in this disease, which were also found by L. Wickham in my case affecting the scrotum (Fig. 56), has lost much of its interest, since it is now admitted even by Darier himself that they are only metamorphosed epithelial cells; their constant presence, however, is of some diagnostic importance.

Anatomy.—The anatomy has also been investigated by Butlin, Thin, Wile, and Duhring, Schweinitz, Porter, and others, with on the whole general agreement. The boundary between the diseased and normal tissue is sharply defined by the proliferating downgrowth of the rete, and by the abrupt termination of the cell infiltration. In the affected area the epidermis is lost to a varying extent, entirely in some parts; but while the surface part is gone, there is downgrowth of the interpapillary part, ultimately compressing and even sometimes obliterating the papillæ. These latter are at an earlier stage densely infiltrated by masses of lymphoid cells, and there is more or less perivascular infiltration in the upper layer of the corium, while in the middle and lower layers are alveoli of epithelial cells, significant of cancer in the advanced cases. The first malignant change, Thin says, takes place in the lactiferous ducts; hence his name of "duct cancer." They are stuffed and dilated with squamous, not columnar, epithelial cells. This proliferating process spreads along the smaller ducts, and the distended walls give way, extruding the epithelial mass; and by its own proliferation and by its effect on the neighboring tissues, cancer develops outside them as well as within, spreading at first upward and outward, and then into the gland structure itself. To Rolleston, however, it appeared to be derived from the stratum Malpighii, but differed from an ordinary epithelioma. The anatomical resemblance of my case to rodent ulcer was very striking. The easiest way to demonstrate the pseudo-coccidia is to scrape the surface, and treat the scrapings with iodin or bichromate of potash, after Darier's plan, or to soak the scrapings in liquor potassæ and mount in glycerin jelly, as recommended by J. Hutchinson, Jr. They can be readily seen with a half-inch power.

* These observations have been confirmed by Bowlby, who examined thirteen cases, *Med. Chir. Trans.*, vol. lxxiv. (1891), p. 341.

They are round or oval, .03 mm. long, have a double contour on section from the shell-like envelope, and are found in the thin, epithelial layer of the raw-looking surface.

Diagnosis.—It is highly important to decide as soon as possible as to the nature of what is, at first sight, only an eczema of the nipple. This may not be possible at the commencement, but when the disease has lasted for some time, in a woman past the climacteric period, and has been rebellious to treatment, the differences between Paget's disease and eczema, which have pointed out by McCall Anderson and others, begin to be recognizable.

Eczema of the nipple is most common during the child-bearing period, especially during lactation; Paget's disease occurs usually after the climacteric. In eczema, while there are frequent fissuring, desquamation, and exudation, there is not the intense red, raw, granulating appearance which is brought into view by the removal of the crusts in Paget's disease, in which there are none of the papules, vesicles, and pustules, with the exacerbations which characterize eczema. In eczema the tissue is soft, there is no induration, and the edge is ill-defined. In Paget's disease there is superficial induration about a line in thickness, to be felt "like a penny through a cloth." The border is sharply defined, and may be slightly raised. Itching, which is an early sign in eczema, is a late one in Paget's disease.

In all doubtful cases search for pseudo-psorosperms should be made by one or other of the methods described under "Anatomy," for their presence is constant in Paget's disease, and they have never been found in eczema.

When the nipple becomes retracted the nature of the disease is no longer doubtful. Shooting or aching pains begin to appear, the breast gets hard, lumpy, and knotty, and before long the neighboring glands become involved.

Prognosis.—Unless the disease is recognized and energetically dealt with the prognosis must be that of cancer; but if the diseased tissue be thoroughly removed or destroyed, a perfect cure may be looked for.

Treatment.—In the early stage, if the diagnosis is doubtful, the treatment would be the same as for eczema of that part, to which the reader is referred. In a woman past the middle age, if the part will not heal with soothing and protective measures,

irritant remedies should be avoided. Mild and superficially acting caustic remedies only do harm; and if the dangerous character of the disease be suspected, either the breast should be removed, or caustics, sufficiently powerful to destroy the whole of the affected tissue, should be selected. The best of these is the chlorid of zinc paste (Caustics, F. 11) which should be spread thickly on lint, the exact size of the diseased area, kept on four or six hours, and the slough poulticed off with wet boric lint, under oiled silk; or the surrounding tissues may be protected by lint wet with vinegar, and solid caustic potash, forcibly bored into the diseased area until it is thoroughly destroyed.

Elliot's case healed completely with an ointment of fuchsin, beginning with a grain, gradually increased to five grains to the ounce. These applications, however, should be reserved for cases which refuse operation, and few women can understand the necessity for so radical an operation as removal of the entire breast when there is only a small sore. Probably the removal of this sore alone, rather widely and deeply, as for an epithelioma, would be sufficient in an early stage, and it might be more easy to obtain consent for the minor operation.

RODENT ULCER.*

Synonyms.—Jacob's ulcer; Cancroid ulcer; Ulcus exedens; Noli me tangere; *Fr.*, Ulcère rongeant; Ulcère chancreux; *Ger.*, Der flache Krebs.

Definition.—A chronic cancerous ulceration of the skin, nearly always on the face, with a tendency to much destruction of all the tissues, very little to new growth, and none at all to secondary infection.

The disease was first described by Jacob of Dublin in 1827; it is still a matter of dispute as to whether rodent ulcer is a separate disease or only a clinical variety of epithelioma, but,

* *Literature.*—Author's Atlas, Plate LXXVI., Figs. 1, 2, 3, showing different stages. For clinical features, Paget's "Surgical Pathology," *loc. cit.*, and Hutchinson, *Med. Times and Gazette*, 1860, "A Clinical Report on Rodent Ulcer." For pathology, Thiersch, *loc. cit.*, and Thin, *loc. cit.*; Collins Warren, Boylston prize essay, Boston, 1872; T. and C. Fox, *Path. Trans.*, vol. xxx.; Sangster, *Brit. Med. Jour.*, October 22,

as it is usually clinically distinguishable, it requires separate description. On the Continent rodent ulcers are usually called epitheliomata.

Symptoms.—The disease is not very rare from the age of forty onwards. It chiefly attacks the orbit, sides of the nose, or any part of the upper two-thirds of the face, occasionally the scalp, neck, and still less frequently, other parts also. It begins as a pimple or trifling excoriation, or as a soft, flat-topped, or indented nodule, which the patient calls a "wart," but the surface is smooth, and it is a brownish-red, solid, moderately firm mass, often with a dilated vessel coursing over it. This growth may remain unchanged for many years, but sooner or later it begins to break down, and when once it has begun to ulcerate, it continues surely, though it may be very slowly and even intermittently, to spread laterally and vertically, eating through all the tissues, both soft and hard, and destroying perhaps the greater part of the face, and eventually the patient's life, by the exhaustion induced, but never implicating the neighboring glands, or leading to secondary deposits—remaining, in short, a local disease from first to last. Throughout its course, although there is variable amount of new growth, preceding and accompanying the ulceration, unlike epithelioma, the new growth is slight compared to the destruction which is the predominating feature. Occasionally, however, the preliminary nodule is as large as a hazelnut or walnut before it breaks down. Bowlby speaks of one of twenty-six years old with a tumor on the nape as large as a Tangerine orange; and Rushton Parker had a case of a large rodent tumor which grew on a bald scalp for nine years without ulceration.

The ulcer is rounded or oval, with a characteristic edge, which is slightly raised, rounded or "rolled," firm, not everted or undermined, with sinuous outline, of a yellowish-red color, with vessels coursing over it, but with none of the warty growths seen round an epithelioma. The center, in long-standing cases, is much depressed below the surface, though at unequal levels if the ulcer is large, but, as a rule, with little

1882; Hume, *Brit. Med. Jour.*, January 5, 1884; Paul, *Brit. Med. Jour.*, May 2, 1885. A. Bowlby, an analysis of sixty-six cases, *Path. Soc. Trans.*, vol. xlv. (1894), pp. 153 and 163. There are many other interesting communications on Rodent in this volume.

tendency to form granulations, the surface being comparatively smooth or traversed by furrows. There may, however, be granulations in one part while excavation is going on at another, and in rare instances it may fungate and bleed, but, as a rule, the discharge is scanty and odorless, and while there is but little tendency to new growth, indicated by the thin layer of indurated tissue at the base and border, there is still less to permanent repair, though attempts at cicatrization sometimes occur when the ulceration has actually eaten away the diseased edge. The cicatrization is still more marked in the very **superficial variety**, of which I have seen a few instances; the ulcer is shallow, of uniform depth, with a sharp-cut edge, the whole looking as if a piece of skin had been punched out, and resembling Paget's disease; in these cases there may be some healing in one part and ulceration in another, or even temporary cicatrization of the whole under simple protective treatment. In one such case, a woman of eighty, the more typical form, with raised, rolled edge, and deep ulceration, subsequently developed on the cicatrized surface, and about two years later appeared the crateriform ulcer to be presently described. The superficial variety is said to be more frequent on the temples * and forehead, and may be deep in one portion.

The ulcer is very slightly, if at all, spontaneously painful. Occasionally,† typical epithelioma has developed on typical rodent ulcer, and then all the secondary consequences of the more serious disease may supervene. Apart from such an accident, rodent ulcer may go on, if left undisturbed, for ten, fifteen, or twenty years.

The following represents the common run of cases, except as regards age and position:

A gentleman noticed at the age of twenty-four a flat, slightly raised, soft, reddish, molelike growth, the size of a shilling, on the side of the neck; it remained unaltered for eleven years, when, after being chafed by his collar, it began to ulcerate, and at the end of nine years more was only two inches by one and a quarter in area, and presented the typical characters of rodent

* *Vide* case of Leader, Fig 3, *loc. cit.*, Author's Atlas.

† Bowlby disputes this, doubting even its possibility, and speaks of rodent ulcers with round lumpy edge as well as the large tumor referred to with rodent structure.

ulcer as seen in its more common position on the side of the nose.

Although it is true that the vast majority of cases (seven-eighths, Bowlby) are situated on the upper two-thirds of the face, a few occur in the lower part of the face, and in rare instances it occurs quite away from the face and neck. I have seen it affecting the ear and nape and just above the sacrum. Bowlby also records it on the back, J. Hutchinson, Jr., on the forearm and in the groin; and I have also had a groin case which developed from a hair follicle, Pigg one in each groin, Rolleston near the umbilicus, B. Robinson on a male breast, and C. Fox on the sternum.*

Rodentlike epithelioma is generally single, but may be multiple. I have seen two rodents on the face twice; three once. Bowlby met with a case with six rodents, five on the face and an enormous one on the back, and Colcott Fox's case had five on the face and scalp.

A unique mode of development in my experience was the formation of a yellow plaque † on the temple of a woman, which began when she was thirty-five. It began as a white spot the size of a hemp seed, but when first seen was a well-defined disc the size of a shilling, slightly raised, quite flat and uniform, and of distinctly lemon-yellow tint, with a few small dilated vessels converging from the periphery, and enlarged very slowly and underwent no other change. After three and a half years, when it was the size of half a crown, it became more prominent at the border in the lower part and ulcerated, and its rodent ulcer nature was then diagnosed. It was excised well beyond the growth in January, 1899, but recurred again and again, the last operation in January, 1902, being the fourth. Histologically it was a typical rodent.

Under the name of "**crateriform ulcer**"‡ Hutchinson de-

* *Path. Soc. Trans.* for 1893, 1894, 1896, and 1898.

† The case was shown in the plaque stage at the Dermatological Congress in London in 1896; but no one could then make a diagnosis.

‡ *Path. Soc. Trans.*, vol. xl. (1889), p. 275, with colored illustrations of three cases. In F. J. Behrend's Atlas (Leipzig, 1839), this affection is depicted under the name of cancer globulosus, Plate XXIII., Fig. 5. The lesion is on the side of the nose near the inner canthus. It is evidently copied from Rayer's Atlas, Plate IXV., Fig. 6, where it is called cancer tubercule ulcéré.

scribed a variety of malignant epithelial ulcer which affects the same regions, on the upper part of the face, as ordinary rodent ulcer; it occurs in the same class of people, but runs a much more rapid course, growing as large in a few months as ordinary rodent would in as many years. It begins as a bossy, rounded lump, which rapidly attains a considerable size, and presents a somewhat conical summit. At this summit ulceration takes place, and with exceedingly little suppuration or obviously destructive inflammation, a cavity forms. The walls of the crater thus formed are very thick and firm; the growth is much less vascular and less succulent than that of rodent, and while it is easy to scrape the latter away, it is impossible to do so with the crateriform ulcer. It has no tendency to fungate or become warty. Nearly all the cases that I have seen have developed on a previous rodent ulcer of the ordinary type, but Hutchinson has met with them as primary growths, and the following is evidently a case of the kind. A woman, æt. thirty-three, noticed, five months before she was seen by me, a small nodule at the right inner canthus; it enlarged to the size of a large pea, and then broke down in the center, and looked exactly like a rodent in the wart stage which had just given way, and such it was diagnosed to be at the Dermatological Society, even by Hutchinson himself. On removal, however, its structure was found to be exactly that of typical epithelioma. All the "crateriform ulcers" hitherto examined have been found to be of the typical epithelioma, and not of the usual rodent-ulcer type of structure. The case Fig. 4 in my Atlas, from the history, began as a rodent; unfortunately, the specimen was lost before it was examined microscopically. Whether these secondary cases are true epitheliomata or not, when once a rodent takes on this condition it grows with great rapidity compared to its former indolence.

Etiology.—I have analyzed 50 consecutive private cases and 25 hospital ones, all in my own practice. Of these, in private there were 32 males to 18 females, while in the hospital there were only 10 males to 15 females; together this would make 42 males to 33 females. In Bowlby's 66 cases collected in the surgical department of St. Bartholomew's there were 40 males to 26 females, so that, as regards sex, the males predominate as about 5 : 3.

The age of onset* is of interest in my 50 private cases, where this point could be determined most accurately. One began under 30, 1 under 35, 7 between 35 and 40, 14 began between 40 and 50, 10 between 50 and 60, 9 between 60 and 70, 8 between 70 and 80. Altogether there were 9 under 40, and 41 over that age. The hospital cases were in the same ratio, 5 under to 20 over 40. Bowlby's figures give a greater proportion under 40, viz., 26, to 40 over. Moreover, while he had only 9 out of 66, I had 18 out of 50 which began over 60. Speaking generally, it is a disease which usually commences after 40 and is rare under 30.

Roger Williams † gives the average age as 44 for males and 42 for females; mine work out much higher.

The earliest date of onset I know of was 12 in a case of Sequeira's. The latest, æt. 87.‡ Bowlby, Roger Williams, and others have also recorded cases under 20. Local irritation of an apparently innocent abrasion or pimple is often the starting-point of the disease, and even when there is a true rodent nodule, it may remain without ulceration for years, if it is not irritated nor injured. A certain number date from a local injury; a very few from unpigmented or other moles; a few from scars. Beyond this we are ignorant of its causation. A cancerous family history is not a factor, as it is in epithelioma.

Pathology.—All are agreed that it is a cancer of epithelial origin, but opinions vary as to its nature. Nearly all § Conti-

* Norman Walker, without stating the number of his cases, says rodents usually begin about the age of 40, and thinks that statistics to the contrary have only regard to the age of the patient when first seen. The above shows that is not the case, only 4 were under 40, 9 came first when 40–50, and 36 over 50.

† The details of his figures are in the Middlesex Hospital Reports for 1888. In his youngest case a pimple appeared on the left temple at the age of fourteen, which soon broke down; it took eight years to reach the size of a sixpence, but in five more was as large as a half-crown; it was then cauterized, and spread rapidly; then it was scraped, and two years later had become epitheliomatous, and was again removed; she died of it at the age of thirty-six. *Brit. Med. Jour.*, October 18, 1890, p. 895.

‡ One of Bowlby's cases. The patient was ninety-four when first seen, and on the lower part of the helix of the right ear was a hard nodulated growth the size of a fig, with rounded and uneven edges and irregular surface, but it was not ulcerated. It began as a pimple, was diagnosed as epithelioma, but had a rodent structure.

§ Unna classes it as the styloid variety of his cylindrical form of epithe-

nental writers regard it as a variety of epithelioma, and this view is supported in this country by Moore, Hulke, Hutchinson, and others, and by Collins Warren and his followers in America. Investigators have differed as to which of the appendages of the skin have given origin to it. Thus Thiersch and Butlin and Paul * (chiefly) believe that it starts from the sebaceous

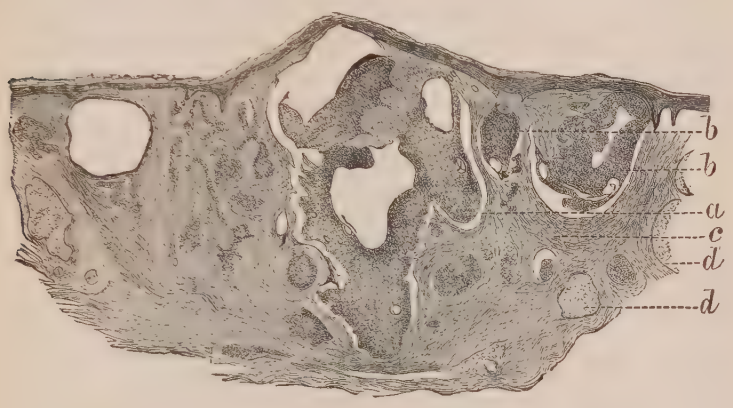


Fig. 57.—Rodent ulcer in the "wart" stage. Obj. 2 in., ocul. 2 in.

a, central mass of epithelial cells beginning to disintegrate; *b*, *b*, similar smaller cell masses imbedded in the fibrous stroma *c*; *d*, *d*, portions of sebaceous glands.

glands, Thin and Norman Walker, from the sweat glands, and Tilbury and Colcott Fox, Sangster and Hume and Bowlby, from the hair follicles.

In the general discussion at the Pathological Society, while there was as much difference of opinion as ever as to which appendage could lay best claim to be the seat of origin, there were few dissentients from the proposition that it was a subepidermal growth with the structure of a glandular cancer quite distinct from the squamous-celled epithelioma. Most admitted that the rete might be involved at a late period, and that then epitheliomatous growth and behavior resulted.

lioma. The views of Continental writers generally are of less weight, as they see but few cases compared to English authorities.

* Paul, *Path. Soc. Trans.*, vol. xlv. (1894), p. 164. From thirty-three cases he considers it to be subepidermic chiefly from sebaceous glands, perhaps sometimes from sweat coils, never from hair follicles. In one of my cases in the groin the growth certainly started from the hair follicles.

Dubreuilh and Auché,* who have examined fifty cases, state that it usually starts in the pilo-sebaceous follicle at the level of the sebaceous gland; that in rare instances it starts from the epidermis itself near the follicle, but that it never starts in the sweat glands.

Rodent ulcer may therefore be defined as primarily a cancer of the appendages of the skin, and probably does not arise exclusively from any one of them. As a late event, the rete may also be involved, but unless this happens the greater part of the growth is made up of granulation tissue, the epithelial proliferation being comparatively moderate.

The cells of rodent ulcers are undoubtedly smaller than those of any epidermic epithelioma, and Thin, in addition, draws the following distinction: In rodent ulcer the nucleus of the cells is fairly uniform in size, the cell protoplasm is scanty and not granular, and the cell wall is not discernible; further, the cells never enlarge into the flat horny cells of epithelioma, they never become prickle cells, never form nests, do not retain the dye of eosin, soften in the center of the cell masses by mucoid degeneration, and the cell infiltration and disorganization of the corium are much less than in epithelioma, while the cell infiltration and mitoses do not go far beyond the cell growth.

Diagnosis.—It is not difficult to distinguish a typical rodent from a typical *epitheliomatous ulcer*. In the first the ulcer is always away from mucous membranes on the upper part of the face; there is very little new growth, and much ulceration. The course is much slower, comparatively painless, and there is no lymphatic implication or secondary deposition; the edge of the ulcer is smooth, flat, or rounded, and seldom much raised. In epithelioma the ulcer is generally on or near a mucous membrane, the new growth always predominates over the ulceration, the course is much more rapid, it is often very painful, and sooner or later it involves the lymphatics, and even affects internal organs, and a warty-like growth is often present at the edge of the ulcer. When, however, epithelioma is quite away from the mucous membranes, its course is often very slow, with but little tendency to lymphatic implication, and the amount of new growth is less, and it then becomes difficult, sometimes impossible, to speak positively as to the nature of the ulcer.

* *Annales de Derm. et de Syph.*, vol. ii. (1901), p. 705. Abs. in *Brit. Jour. Derm.*, vol. xiv. (1902), p. 150. A good article of seventy-four pages.

This is well exemplified in the case related above under Crateriform Ulcer.

From *syphilitic* and *lupus vulgaris* ulcers, the age of the patient, its origin from a single nodule, the very slow course, and its being nearly always single, the absence of deposit in the surrounding tissues, and the very scanty discharge, would distinguish it. The same distinctions hold good between rodent and strumous ulcers, except that there is no induration in the latter.

The rodent nodule may be mistaken for a soft wart or small fibroma. The age and development of the growth, its shining,

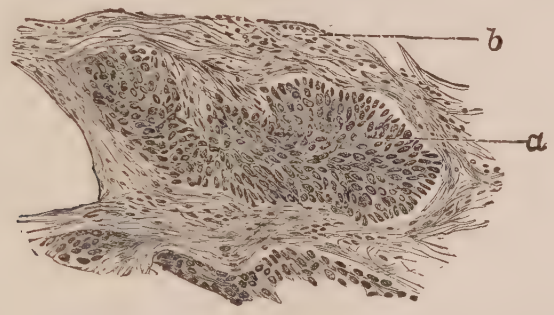


Fig. 58.—Rodent ulcer. A portion of Fig. 57 under a higher power. Obj. ¼-in. Ross, ocul. 2 in.

a, a small epithelial cell mass imbedded in the fibrous stroma *b*, which is infiltrated with round cells. The outline of the epithelial cells is for the most part undiscernible, only the nuclei being visible.

waxy aspect, and the almost invariable presence of dilated vessels over it should seldom leave any doubt.

Prognosis.—Although, as a rule, very slow in its progress, if left to itself, it spreads either continuously or with short intervals of quiescence, and besides producing wide and deep destruction, will eventually exhaust, and, directly or indirectly, kill the patient. Persevering treatment may, however, effect a perfect cure; and I have seen a case of an old woman who had two ulcers, one of which healed permanently. Temporary healing is quite common. In a case of extensive ulcer, with exuberant growth at the border, a great portion healed soundly under iodid of potassium, though the rest, which looked the same, had a typical rodent aspect under the microscope.

Treatment.—Like ordinary epithelioma, free removal of the ulcer, going well into the healthy tissues round, is the only safe

course; its synonym, "noli me tangere," is a standing warning against half measures, which only irritate the ulceration into greater activity.

The knife, erasion, caustics, and the galvano- or Paquelin's cautery, are the means to be employed, and of these, one or other of the first two is generally preferable, according to the position. After erasion, which should only be employed where excision is impracticable, it is safer to swab the part freely with chlorid of zinc solution, 3j to the ℥j of water, or, better still, the application of the Middlesex chlorid of zinc paste (Caustics, Fig. 11), and although recurrence is very likely to take place in some part, if a similar treatment be resorted to without delay, complete eradication may generally be obtained. In extensive ulcers removed with the knife, Wolfe's * method of transplantation, from the arm or other convenient part, may be employed to replace the removed portion. Where operation is refused Unna's resorcin plaster may be tried, renewing it each day. Boeck, Unna, and others have been successful with this method. In the use of caustics and other remedies the observations on the treatment of epithelioma may be referred to. The "crateriform ulcer" of Hutchinson requires free excision without delay, and then it is not likely to recur.

Where operation is refused or is otherwise unsuitable the Röntgen rays are a good alternative for many rodents. A ten-inch coil, a six-inch tube, a mercurial jet interrupter are the apparatus required. All but the ulcer is protected by a lead-foil mask, the tube should be about four inches from the ulcer, and a current of four ampères employed. From ten to fifteen daily exposures of ten minutes each are usually required, stopping at once if any erythema round is produced. The ulcer generally heals very satisfactorily, but requires watching, as it is very seldom that permanent cure is obtained except by repetition of the exposures, though a smaller number than at first are usually sufficient.

The Finsen light has also been used with success, but the results have not been so good in most cases as with the Röntgen rays.

* Esmarch, *Lancet*, June 8, 1889, and A. Ceci, *Brit. Med. Jour.*, April 16, 1892, illustrated with portraits of successful cases, show the advantages of the method.

SARCOMA CUTIS.*

Sarcoma of the skin is generally due to metastasis,† or invasion from other parts or organs, but it may be primary in the skin structures, single or multiple, pigmented or non-pigmented. They exhibit a tendency to general spreading and metastasis to glands and internal organs, and lead to the death of the patient.

Clinically, they may be divided into pigmented and non-pigmented sarcoma, the latter of very variable histology.

They are round, spindle-celled, or giant-celled,‡ with a delicate reticulum, and numerous vascular tunnels through them.

Another group of malignant tumors, but differentiated from true sarcoma, are those histologically characterized by lymphoid cells, in which are included leukemic and pseudo-leukemic (Hodgkin's) tumors and the malignant lymphoma.

A second group is called "Sarcoid," a sort of limbo for cases of doubtful pathology, which is sought to be established by Kaposi, Boeck, Johnston, and others. It includes multiple idiopathic hemorrhagic sarcoma, sarcomatosis (Kaposi), and multiple benign sarcoid (Boeck). Clinically and histologically they have not much relationship to each other, and I have also placed here the obscure "Mortimer's malady."

Melanotic Sarcoma is the most common form, and all melanotic growths have for a long time been considered as of this nature. As already mentioned, however, Chambard, J. Hutchinson, Jr., Unna, and Gilchrist have recently shown that this is not the case, and Unna states that *all* growths with metastasis which starts from pigmented moles are really melanotic carcinomata, and have an alveolar structure, and should be called nevo-carcinoma.§ The clinical behavior is the same as the form

* Unna's "Histopathology."

† "Sarcoma and the Sarcoid Growths of the Skin," by James C. Johnston, a good thoughtful article, *Brit. Jour. Derm.*, vol. xiii. (1901), p. 241.

‡ The giant-celled are said to be derived from the bone marrow, and therefore secondary, but I am not sure that this is always true.

§ Whitfield, *Brit. Jour. Derm.*, vol. xii. (1900), p. 267, discusses the question with most of the references. To these may be added Hodara's and Audry's paper, and one by Tailhefer, also published in the *Jour. des Maladies Cut.*, vol. xi. (1899), p. 65; vol. xiii. (1901), p. 798; and vol. ix. (1897), p. 129 respectively.

which is still admitted to be melanotic sarcoma, which usually starts from the choroid coat of the eye, but the back and sides of the hands and feet, and the genitalia, are common positions for the primary growth; on the foot the common position is "under the middle of the tread of the heel," perhaps from injury from a nail in the boot. The following case, although more rapid in its course than usual, illustrates the clinical features.

Mrs. K.,* æt. fifty-eight, with a strong family history of cancer, noticed what she thought was a blister from friction on the outer side of the right foot, below the malleolus. From this developed, in the course of five months, a fungating, slightly pigmented growth, the size of a crown-piece, which was excised by Mr. Rivington, and proved to be a melanotic sarcoma; eight days later melanotic growths appeared on the outer side of the right thigh; in a week more they sprang up round the wound of operation, and from that time fresh tumors appeared daily, but almost confined to the right lower limb, the lymphatic glands remaining free; a few came on the trunk and head of the same side. Each tumor first made its appearance as a flattish papule, the size of a hemp seed, and the color of a half-ripe mulberry; in two days it showed signs of pigmentation, and very soon became of a bluish-black color, like a Hamburg grape, discoidal, of any size, up to about half an inch in diameter, and raised about an eighth of an inch above the surface. The tumors by continual multiplication became confluent in some places, and then formed large, flattish, irregularly lobulated black masses, which soon broke down, fungated, and discharged sanguineous pus, or at times bled freely. She died, with symptoms of visceral implication, in less than four months after removal of the primary tumor.

The following case illustrates another mode of development. A surgeon, æt. forty-five, had noticed a pigment spot under the clavicle, half an inch across, twenty-two years ago; it grew slowly for twenty years, but more rapidly a year and a half before I saw him, when it was an oval patch two and a half by one and a half inches, slightly raised with irregular border of deep black color for one-eighth of an inch, then a purplish zone, and a nearly normally colored center.

Six weeks before he came a small part which had been

* Plate LXXVII., Fig. 1, of my Atlas represents her case.

slightly sore and scaly for a year ulcerated, and formed a granular elevated patch half an inch in diameter, and there was slight enlargement of the glands in the axilla. The patch was excised, and was found to have a pigmented mole structure as a whole, and there was also a point of pigmentation in one of the excised glands. The fungating growth was what is usually classed as melanotic sarcoma, but the epithelial elements showed that it was a melanotic carcinoma with alveolar structure. There was very little pigment in the growth itself, doubtless from its being only six weeks old. In the generalized cases a slate-blue pigmentation of the whole surface simulating argyria * some-

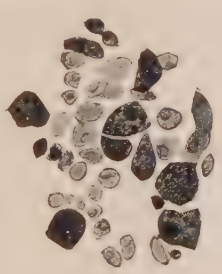


Fig. 59.—Pigmented cells of a nevo-carcinoma. Zeiss D. D. 10-inch tube.

times supervenes towards the end, associated with melanuria. (Wickham Legge, I. Trumbull's cases.)

A special and insidious form is that described by Hutchinson as "**melanotic whitlow**"; † at first it appears as a chronic onychitis often due to injury, with very little pigment, like a "lunar caustic stain," and that only at the border; it very gradually develops into a fungating tumor, with still only a little pigment; the nail is thrown off, and generalization soon occurs. Nunn ‡ reported a case in 1880.

Galloway § read a good paper on the subject at Montreal in 1897, based on a case in which the disease was just commencing on the foot. It would probably have developed like the first text case. See also Lentigo Melanosis.

* A case with many peculiarities and a different form of pigmentation was published by Abraham in *Brit. Med. Jour.*, January 2, 1892, p. 13.

† *Brit Med Jour.*, March 13, 1886.

‡ Melanosis of the little finger, *Path. Soc. Trans.*, vol. xxxi. (1880), p. 299.

§ *Brit. Med. Jour.*, October 2, 1897, p. 873, with numerous references.

The treatment for melanotic sarcoma is the same as for the non-pigmented form, but the prognosis is rather worse. In all melanoses prevention is emphatically the best course, and every melanotic deposit, whether of mole or other origin, should be promptly and widely removed as soon as it shows any sign of activity.

In the **Non-pigmented Sarcoma Cutis** the tumors may be in enormous numbers, amounting to several hundreds, or there may be a few only, or even a single one. In size they may be from a lentil to a bean, or larger, firm to the touch, not necessarily tender, and the skin over them is reddish or brownish or bluish-red, and perhaps slightly scaly. Very many of the cases reported as sarcoma cutis are really subcutaneous, and the skin over them more or less movable, and often of normal color. Where they are very thickly placed they may form plates or masses, with a more or less nodular surface. They are, however, scarcely two cases alike in either clinical features or structure.

A case I saw with my colleague, A. Barker, is an example of a single tumor in the first instance.

A round-celled sarcoma developed on the site of a "Scinde sore" on the cheek of a young army surgeon, three months after the development of the sore. Seven months later it formed a fungating mass one inch across, and a third of an inch above the skin, from which it rose abruptly, but infiltration round could be felt for a quarter of an inch. He died within a month of its removal from visceral generalization.

T. Norton records a very similar tumor on the leg with oozing of blood. Glandular infection had taken place before its removal and generalization produced a fatal result in eight months.

The following is an instance of a moderate number of tumors: A healthy-looking man, æt. forty-seven, noticed on his right cheek what he took to be a small mole, which irritated him and was scratched, and then grew to the size of a hazelnut. This was removed at the county infirmary, but grew again, and when seen fifteen months from the first onset was as large as ever, and there were numerous smaller secondary growths, extending nearly to the angle of the lower jaw. Many of the smaller

growths coalesced with the base of the larger one, but there were isolated hemp-seed to pea-sized tumors beyond it. They were of a livid color, and the central one was scabbed, and bled easily. The tumors were firm and not tender, but were sometimes painful. There was a solitary enlarged gland under the angle of the jaw, but the general health was unaffected. The tumors were excised by Mr. Heath, but in six months the man returned with a few fresh tumors on the cheek, and enormous enlargement of the submaxillary lymphatic glands. The date of his death is unknown. The tumors excised first by Mr. Heath were those of alveolar sarcoma, those of the second recurrence were round-celled sarcomata.

In a case of multiple sarcoma in a man of sixty, brought to me by Dr. Peter Cooper, the lesions were erythematous, slightly raised discs from half to an inch in diameter, the smaller flatly convex, the larger flatly concave, firm, and more tumorlike to the touch than to sight; in many of them the follicles were very prominent. There were no sensory symptoms. A few only appeared first on the chest, but after about nine months they began to develop more rapidly, and in three months were very numerous all over the trunk and upper segments of the limbs, and slightly on the lower segments; later the testicles, lymphatic glands, and viscera became involved, the skin tumors disappeared, and the patient died fifteen months from the first appearance of the skin growths. From the general and extreme enlargement of the lymphatic glands lympho-sarcoma was diagnosed, but no microscopical examination was allowed.

There is a rare form of spindle-celled sarcoma, described by Hutchinson as **"recurrent fibroid of the skin."** "It begins usually in the lower extremities, grows slowly at first, but recurs rapidly and persistently after removal, however wide the incision, and ultimately generalizes, fungates, forms blood cysts, and destroys the patient."

In another form of **Fibro-Sarcoma** * a single tumor may be present for many years, growing very slowly, and when multiplication takes place it is limited to the neighborhood of the original growth for a long time, ultimately the tumors become widely spread.

* Ionides showed a case of this kind to the Derm. Soc. of London, *Brit. Jour. Derm.*, vol. viii. (1896), p. 439.

A remarkable case, with myriads of tumors with "myeloid cell" structure (Fig. 60), was shown by me at the Dermatological Congress in London in 1896. The tumors developed soon after an attack diagnosed as acute rheumatism in a man, æt. thirty-nine. They appeared first on the hips on March 3, then about the elbows, then all over the back, and then on the legs. On March 6 there were a few on the face. When I saw him with Mr. Sworn on April 29 there were congeries of coalesced tumors on each elbow, forming a nodular mass some two inches

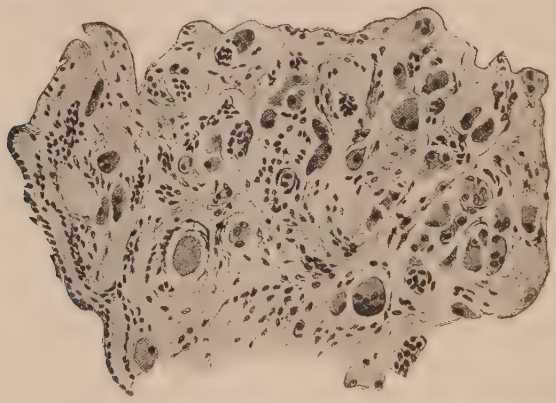


Fig. 60.—Myeloid cell sarcoma from a tumor excised from the right elbow.

in diameter; near this mass were isolated tumors from a hemp seed to a filbert in size, but the majority were roundish, very distinctly raised, of a brownish-red color, and of firm consistence, but quite painless and not tender. Over the buttocks and hips there were many scores of similar growths, a few of them three-quarters of an inch in diameter; near the anal cleft there was a uniform brick-red infiltration in which tumors were not traceable. Nearly the whole of the back below the spines of the scapulæ was a mass of nodular infiltration of a purplish-red tint made up of myriads of small tumors. On the trunk in front there were only a few tumors, but there was a purplish infiltration like that of the back, at the lower part of the abdomen. There were very numerous tumors at the lower part of the buttocks, a moderate number at the back of the thighs, and scarcely any below the popliteal spaces. There were only a few small tumors in front and inside the thighs, but some were like those on the elbows and the knees.

There was effusion of fluid into the sheaths of the tendons at the wrists, knees, and tuberosity of the tibia. His wife said there were a few lumps in the scalp as far back as July, 1895, and that they had increased in size and number since. A tumor evoluted quite suddenly in a night, enlarged to a pea or bean, and sometimes involuted again, leaving brown spots. The patient was not cachectic, but as he had much pain in his joints, salicin in fifteen-grain doses three times a day was prescribed. In a week it was noticed that many of the tumors had become smaller, and in a week or two more scores of them had disappeared, and many others were in process of absorption, and cavities could be felt in the larger ones.

The infiltration in the back diminished greatly, and when shown at the Congress a very large part of the disease had disappeared. Unfortunately he has been lost sight of since.

Köhler and Johnston * report a case very like the above clinically, but histologically it was a small spindle-celled sarcoma.

Perrin and Leredde † report a generalized case of giant-celled sarcoma, but the clinical features were different from my case, and the lesions much less numerous.

Hallopeau and Jeanselme had a case which began in the hand, and spread along the lymphatics simulating an infective lymphangitis. But these examples are enough to show how variable are the clinical symptoms, except in one particular, that sooner or later, and in the majority sooner, the tumors generalize in the viscera, and the end is then near at hand.

In rare instances multiple sarcoma may be congenital. Dr. Jordan Harvey brought for my diagnosis the dead body of an infant, in whom there were nodular growths at birth, about seventy pea- to bean-sized nodules of purplish color over the body and face. Pernet's ‡ examination showed them to be small round-celled sarcomata with large vascular tunnels in them. Ramdohr had a case with twelve growths on the body and a few on the face and in the kidneys.

* "Idiopathic Multiple Sarcoma of the Skin," *Amer. Jour. Cut. Dis.*, vol. xx. (1902), p. 5.

† *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 1038. Abs. *Brit. Jour. Derm.*, vol. vii. (1896), p. 147.

‡ *Path. Soc. Trans.*, vol. liii. (1902).

Treatment had always been futile, a fatal issue appearing inevitable, until Köbner tried arsenical injections. Fowler's solution was used, diluted one to two of distilled water. The first case was a girl of eight, who had more than three hundred tumors, from a hazelnut in size downwards, scattered nearly all over the body. Two and a half to four drops of the solution were injected once a day, and after three months the dose was raised to seven and a half and then to nine drops. The tumors gradually disapeared, leaving at first brown, slightly scaly patches, and finally even these disappeared: the child was quite well a year later.

A similarly successful case, in a woman, æt. thirty-one, is reported by F. D. Shattuck. The disease was first observed in the submaxillary lymphatic glands, and subsequently enormous numbers of pea-sized tumors developed in the skin. The dose was at first four, and later six minims of Fowler's solution diluted; the treatment was continued for about eight months, and she was quite well a year later.

Although, as was to be expected, this treatment has failed in many instances, others in addition to Köbner and Shattuck have had equal success, amongst which Sherwell's case may be specially mentioned.* Lassar † has gone further, and brought forward a successful case of melanotic sarcoma, treated by liq. arsenicalis internally; and Pospelow has had a good result in a case of round-celled sarcoma, in which he gave both the solution and Asiatic pills. My own case of involution of tumors under salicin is in the same direction, and suggests a microbic ‡ origin for sarcomata.

Coley's fluid is a solution of erysipelas toxin with that of bacillus prodigiosus, and was suggested to him by the amelioration often produced by an attack of erysipelas. It was recommended to inject the fluid subcutaneously, beginning at half to one minim and increasing to six minims. Febrile reaction

* Sherwell, Abs. *Brit. Jour. Derm.*, vol. v. (1893), p. 125, original in *Amer. Jour. Med. Soc.*, October, 1892.

† Lassar's case is reported in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1118.

‡ This hypothesis is strengthened by the existence of infective sarcomata in dogs, which can be transplanted. B. Smith and Washbourn, *Brit. Med. Jour.*, December 17, 1898, p. 1807.

occurs and sometimes dangerous symptoms. While there have been some successes, the general opinion is against its employment, and at all events it should be reserved for desperate, inoperable cases.* It is possible that an improvement in the character of the fluid, and in the method of using it, may give a better prospect.

M. C. Beretta † brings forward evidence of amelioration from anti-cancerous serum injection, but this requires further investigation. At all events there are indications that the treatment of sarcoma is not quite so hopeless as was formerly the case.

Sarcoma Capitis, or Endothelioma Capitis (Turban tumors). A peculiar form of tumor, in rare instances attacks, and is limited to the hairy scalp; in extreme cases, covering the whole scalp like a wig.

The first case on record is by Morrant Baker ‡ under the name of "withering sarcoma of the scalp." The patient, a man, æt. twenty-four, received a blow on the head, and the tumors developed soon after, one ten inches in diameter was removed, and proved to be a fibro-sarcoma. Some of them underwent involution.

Kaposi § showed the model of a similar case with billiard-ball to orange-sized tumors, very numerous and forming a wiglike covering over the entire scalp; the tumors had been growing for forty years in a man, æt. sixty; he had some similar tumors on his back. His daughter had for a year noticed pin's-head to pea-sized tumors developing on the head, face, and trunk, which were proved histologically to be of the same nature, and Kaposi called them endothelioma congenitale. He referred to a case of Poncet published in the *Revue de Chirurgie* (1890).

Oro's ‖ case, also after injury, was a spindle-celled sarcoma in

* *Vide* Sheild, Butlin, Moulin, Battle, and Shattuck, etc., *Brit. Med. Jour.*, January 23, 1897, p. 193; January 30, p. 299; August 13, and December 3; and *Lancet*, November 19, 1898, *Med. Soc. Report*, 1898, etc.

† Annotation, *Lancet*, August 27, 1898, p. 565.

‡ Museum of Coll. of Surg., Skin Sect., No. 313–14 of 1895 Cat. Two wax models. There are also models and drawings in the St. Bart.'s Museum of this case.

§ "Comptes Rendus de Cong. Int." Rome, 1894, p. 135. Illustrated in Plates CCXXXI. and CCXXXII., Kaposi's Hand Atlas, as a form of Molluscum.

‖ *Giorn. Italiano d. mal. ven. e d. Pelle.*, Fascic. II., 1896.

a man, æt. seventy-four, and was more like Morrant Baker's case, but is described as a single tumor with lobes which covered the head like a turban.

In a case reported by Cohn * of Portland, U. S., the patient was a woman, æt. fifty-two. The growths had been forming since she was twenty-four years old, and many had been removed; a grandmother was said to be similarly affected. Structurally they consisted of oval cells in alveoli, and of fusiform cells and fibrous tissue. Barrett † of Melbourne has published another case of a woman, æt. sixty; and two of her daughters had similar growths. He called them multiple sudoriparous adenomata. Spiegler's ‡ paper on "Endothelioma of the Skin," without giving a new case, focuses five of the previously published cases—Kaposi's (two: father and daughter), Poncet's, Ancell's, and Cohn's.

Their family prevalence suggests that they are really of congenital origin though often late in development. They are not malignant in their behavior and are not true sarcomata, and some say they are "endotheliomata."

Idiopathic Multiple Hemorrhagic Sarcoma § is very rare in this country, only two indisputable cases having been reported, both by Pringle. Kaposi, however, who first described the disease in 1879, has had thirty cases; in Naples it is not so rare, De Amicis having had over fifty cases; and it is frequent in Northern Italy. In Russia, ‖ Stoukovenkoff of Kief had ten, and others have been met with. Cases in other European countries have occasionally been reported, and a few in America by Wigglesworth, Fordyce, ¶ Jackson, Breakey, Hyde, etc. Se-

* *Amer. Jour. Cut. Dis.*, vol. x. (1892), p. 393.

† Barrett, *Brit. Med. Jour.*, February 6, 1892.

‡ Spielger, *Archiv f. Derm. u. Syph.*, vol. 1. (1899), p. 163, with illustrations.

§ Kaposi himself has proposed to substitute "hemorrhagic" for "pigmented" as the name for this disease, to prevent its being confounded with the other form of pigmented sarcoma. Plate IV. of the Internat. Atlas gives a good illustration and references to previous cases, by Schwimmer.

‖ Semenow read a paper at the Moscow Congress, 1897, on these ten cases, of which there is a good abs. in *Brit. Jour. Derm.*, vol. x. (1898), p. 64.

¶ Fordyce's cases are in *Jour. Cut. and Gen.-Ur. Dis.*, vol. ix. (1891),

queira* has published what he considers to be a case of this disease, while admitting that it is of the same type as those cases called by Hutchinson **symmetrical purple congestion of the skin** (*vide* p. 143).

Tandler's† case appears to me to belong to erythema elevatum diutinum (*vide* p. 142).

The pigmentation is due to hemorrhages into the skin. The following account is taken chiefly from those of Kaposi and Funk.‡ It attacks first the palms, soles, or backs of the hands and feet, either simultaneously or with short intervals, then the legs and forearms, the thighs and arms, and reaches the face and trunk in two or three years. The ears are sometimes affected at an early stage. It commences, with or without preceding edema, as diffuse cyanotic spots which pass into infiltrations, and these into nodules; or it may commence as nodules.

They are roundish, from a shot to a pea or bean or even a cherry in size, reddish-brown or bluish-red, irregularly discrete or in small or large groups. They are tender, and their development is attended with pain, which may radiate up the limb, and there may also be pain from the tension, for besides the tumors, in some cases, there is a diffuse elephantiasis—like thickening of the extremities, especially of the legs, so that the limb is stiff and distorted, and in the case of the hand overextended, so that the patient is completely crippled. When the trunk is affected—and the whole cutaneous surface may be involved—the skin and subcutaneous tissue are diffusely infiltrated, hard as a board, and immovable, with a nodular surface, and of a dark violet-brown or plum color (Funk). In one-fourth of the cases nodules of infiltration are present on the glans penis, prepuce, and scrotum.

The tumors never ulcerate and seldom suppurate, but may disintegrate and disappear, leaving pigmented scars, or, where they are in patches, the center only undergoes involution. This may occur in even a single nodule. On the trunk and face the

p. 1, colored plate of the extremities. Hardaway, in vol. i. (1883), gives colored plate of face

*Sequeira, *Brit. Jour. Derm.*, vol. xiii. (1901), p. 201, with colored plate. Histologically the growths were inflammatory and not sarcomata.

†*Archiv f. Derm.*, etc., vol. xii. (1807), p. 163, colored plate.

‡Funk, *loc. cit.*, gives many exceptional cases, and includes a very mild type. Kaposi, Besnier-Doyon edition, contains many references.

surface may be eroded and expose a blood-infiltrated tissue, which may become warty or fungoid from irritation. Dilated vessels and hemorrhages round the nodules are common. In middle-aged persons the general health may be but little affected for several years, except from the itching, burning, or pain in the extremities, but fresh nodules continue to form, and ultimately the mucous membranes are affected, when the downhill course is often rapid. "Dark bluish-red patches, diffuse infiltrations, or little nodules arise on the gums, palate, or uvula; the tonsils become swollen, the patient becomes markedly anemic, emaciated, and feverish. The lymphatic glands, spleen, and liver become considerably enlarged. In this stage whole groups of nodules sometimes ulcerate, and deep, ichorous, extremely offensive ulcers are formed. The neoplasms of the mucous membranes ulcerate still more quickly" (Funk). Marasmus, bloody diarrhea, and hemoptysis close the scene, and post-mortem similar tumors are found in most of the viscera, especially in the descending colon, where they tend to slough. The ordinary duration is from three to five years, but in young persons death may occur in the first, second, or third year, while six or even twelve years may elapse in older people before the health gives way. Recovery does, however, occasionally take place. Hardaway's * and Funk's case recovered completely. Mackenzie's case, which had previously been under Pringle, was a Galician Jew, æt. forty-five, whom I had the opportunity of examining on several occasions. After presenting all the typical symptoms, and having one leg amputated, he seemed to be in a hopeless condition, but ultimately, not apparently as the result of treatment, he improved, and when shown to the Dermatological Society in 1892, appeared to be in a fair way of recovery, large numbers of the tumors and the elephantiasis of the limbs having disappeared, and ultimately he got quite well, but with the hands permanently *en griffe* with much overextension at the knuckles.† In Jackson's case the fingers were permanently flexed on the palms.

De Amicis, who has had even more cases than Kaposi, recognizes three stages: I. A period of infiltration forming plane maculæ. II. A period of tumor formation with telangiectases,

*Hardaway, *Jour. Cut. and Gen.-Ur. Dis.*, January, 1890.
†Pringle, Photo. Club Atlas, 1898.

angiomatous in character. III. A period of necrobiosis of the tumor and generalization.

Etiology.—Most of the cases have occurred in middle-aged men, very few in women. A case of Kaposi's was seventy-three; several have occurred between twenty and thirty, and a few under twenty. Corlett (Cleveland, U. S.) had three cases in one family, the youngest two years old, and De Amicis had one of a child of five. A large proportion have been Polish and Galician Jews of the lowest class; but whether this is the result of their race, their habits, or surroundings it is impossible to say. Its frequency in Naples suggests the latter. Jackson's case dated from a frost-bite, and Semenow regarded prolonged exposure to cold as an important factor.

Pathology.—Its pathology is quite unknown, but Fordyce and Wende advance plausible arguments in favor of its being caused by an infective agent.

Anatomy.—Kaposi's and Stoukovenkoff's cases were chiefly small-celled growths which they called sarcoma, situated in the corium, riddled with vascular sinuses and containing small hemorrhages, and free pigment granules, but Funk's, Schwimmer's, Fordyce's, and Jackson's cases were made up of spindle-cells closely interwoven, so that in cross-section they appear to be round cells.

The pigment is entirely due to the hemorrhages, and therefore quite different from that of the other pigmented sarcomas. There are great numbers of new blood-vessels, numerous mitoses, and an intercellular reticulum. Pringle found bacilli in the tumors and sweat glands, but other observers have failed to do so. Semenow found changes in the peripheral nerves, and ascribes to them an etiopathological importance. De Amicis regards the disease as a granuloma; Sellei also takes this view, which, though not established, is probably correct.

Diagnosis.—The leading features are the commencement in the hands and feet of small painful plum-colored tumors, followed by elephantiasis, deformity of the extremities, board-like indurations, and ultimately generalization, with a usually fatal result. The diseases with which it may be confounded are at the commencement the palmar and plantar scaly syphilid, and later in its course mycosis fungoides, syphilitic gummata, and the nodules of lepra and lupus.

Prognosis.—The majority of the cases have been fatal in from two to five years, but some have lived over twenty years (Brayton's twenty-five), and a few have recovered spontaneously, or

as the result of treatment (Hardaway's, Funk's, Mackenzie's, Köbner's, and Pringle's).

It has many features in common with Hutchinson's "symmetrical purple congestion of the skin," and Sequeira regards the two affections as only variants of one disease.

Treatment has been unavailing hitherto, but although it failed in Schwimmer's and Fordyce's cases, Köbner's * treatment by injections of liq. arsenicalis deserves further trial, as several have had encouraging improvement after its free administration.

Sarcomatosis Cutis (Kaposi, third type). The following is from Kaposi's third American edition. The tumors may be very numerous on the trunk and limbs. They are bluish-red, flat or somewhat prominent, in defined patches of the size of the finger-nail, which on palpation are firm elastic nodules deep in the corium and even below it. Earlier nodules can only be felt, not seen. Sometimes the nodules are painful, at others only tender. There are no glandular enlargement, no blood changes, or other general defect. Two men got quite well with "methodical arsenic treatment."

In a third case, an old woman, who had had the disease for four years, there were about one hundred tumors on the upper part of the trunk. The nodules were pea- to nut-sized, hemispherical, and firmly elastic; the small ones bright red, the larger bluish-red, smooth, shining, and tender. There were also some palm-sized flat raised plaques with a central depression and indented borders like the tomato form of mycosis fungoides; there were another hundred nodules over the rest of the trunk and a few on the limbs. After seven or eight injections of arseniate of soda, .02 gram every second day, the majority of the nodules flattened and collapsed by half to two-thirds. Subsequently they continued to grow in spite of the arsenic; similar cases are on record, many cured by arsenic, but others fatal. Microscopically they were round-cell growths, sarcomata Kaposi called them, and different from lymphoma. Their greater depth in the cutis distinguishes them from mycosis fungoides.

* *Berlin med. Wochensch.*, 1883, No. 2. See p. 694. Abs. in *Annales de Derm.*, vol. vii. (1886), p. 189.

Joseph * brought before the Berlin Dermatological Society a man, æt. thirty-two, on whom in a few months large numbers of tumors had developed over the whole body, including the scalp. They began in the dermis, and some were as large as a cherry; the skin over them was reddened from networks of dilated vessels; and the microscope showed that between the fibers of connective tissue there was an infiltration of round cells with vesicular nucleus and nucleolus. He regarded them as one of the cases of sarcoma cutis which Kaposi was the first to call sarcoid, belonging to his Type III.

Multiple Benign Sarcoid (C. Boeck).† The following is his summary of the characters of the disease after relating the cases. He also says a case was shown, but not recognized, at the Dermatological Congress in London in 1896.

"The type case was a middle-aged, pale man, in whom were found groups of lymphatic glands much swollen, and on examination a slight increase in the number of white corpuscles. At the same time there was a widespread, nearly symmetrical eruption of firm nodules on the head and extensor surfaces of the trunk and extremities. They ranged in size from a hemp seed to a bean, and the larger had irregular contours. They involved the whole skin and were movable with it. On the scalp there was no infiltration, but only yellowish patches. The color of the early nodules was bright red, becoming darker, and finally yellowish or brown. Slight scaling occurred on older lesions. They showed a tendency to peripheral spreading and central depression. On the face they had a peculiar appearance with blue center and yellow border—a feature present in all Boeck's cases. The nodules disappeared eventually, leaving, as a rule, a loss of substance in the skin, which was white on the face, yellow on the back, and darker at the periphery on the legs. Neither exudation nor ulceration ever took place. A papular eruption grouped like lichen planus was seen on the inside of the thighs. A tendency to develop on the site of an

* Reported in *Annales*, vol. ix. (1898), p. 492.

† C. Boeck, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xvii. (1899), p. 543, with colored and photographic plates; also, "Weitere Beobachtungen über das multiple benigne Sarcoid der Haut." Reprint from M. Kaposi's "Festschrift."

old injury should be remembered. The symmetry was not such as is found in affections whose localization is evidently determined by central nerve influence. The disease seemed to be benign, and disappeared under arsenic or perhaps spontaneously. Compared with Mortimer's malady there were many points of resemblance; in the latter there are essentially the same symmetrical eruption of nodules and patches, in the same localities, a slow peripheral spreading with central depression, and after long duration, spontaneous involution without ulceration and with loss of substance.

"Hutchinson's cases had good health. He does not, however, mention swelling of lymphatic glands nor the peculiar appearance of the face patches. In his case there were diffuse subcutaneous infiltrations over the bridge of the nose and the ears. The nodules were, according to description and plates, more elevated than I have seen them. Future observation must decide to what degree these differences are essential."

The histology was also unique. The areas of new growth might be described as perivascular sarcomatoid tissue, built up by excessively rapid proliferation of epithelioid connective tissue cells in the perivascular lymph spaces, with very few cells of other kinds. The tumor soon begins to degenerate, and the tissue is atrophied, showing a network of branched connective tissue cells.

It should be remembered that true giant cells of sarcomatous type were found, though rarely. Compared with other new growths of the skin, this must be said histologically to possess affinity to sarcoma, and also to the very rare cases of so-called pseudo-leukemia cutis, described by Arning and Max Joseph. The new growths here described nevertheless seem at present to be rather *sui generis*.

It should be particularly emphasized how different the histology of this process is from that of leukemia cutis with its lymphoid tissue and small lymphoid cells, but the clinical resemblance is very close.

Mortimer's Malady (Hutchinson's).* Hutchinson has met with four cases, two of them quite alike; the other two "probably allied." "The disease is characterized by the formation of

* Hutchinson's *Archives of Surgery*, vol. ix., Plate CLII., p. 307.

multiple dusky red patches which have no tendency to inflame or ulcerate. They are very persistent, and extend but slowly. They occur in groups, and are usually on both sides and almost symmetrical.

"The multiplicity of the patches, their occurrence in groups, their bilateral symmetry, and the absence of all tendency to ulcerate or form crusts are features which separate the malady from lupus vulgaris."

The type case was a woman, æt. sixty-five, in whom the disease had existed for a year in August, 1894. The lesions were in symmetrical groups on her face and upper arm. They were much raised, sharply defined, of dusky red color, and rather soft structure. Some had a slight exfoliative scaly crust, but with no ulceration beneath, and though some of the patches were depressed in the center there was no ulceration. Six months later the patches had increased in number and size, and many had coalesced on the left cheek and brow and the lobule of the left ear had become involved like common lupus. The nose was swollen across the bridge, forming a thick soft tumor, but without implicating the skin. Two years later the patches on the left cheek still showed their nodular origin. Many of the nodules were involuting, especially on the left eyebrow and ear; and on the arms some had quite disappeared and left thin scars. In 1897 her condition was nearly the same, and her general health had never been affected.

His second case was a man of forty-five in whom it had been present several years on the face with very little change. His ears were much affected; there were large areas of scar without previous ulceration on the thighs and legs.

There has been no histological investigation for comparison with Boeck's benign sarcoid (see that disease). The only case in my experience at all like it was a man with infiltration over the nose and ears, and round tumors with depressed centers, but it differed in that many of the lesions broke down and ulcerated. The pathology of Mortimer's malady therefore remains for future investigation.

LEUKEMIA CUTIS.*

Biesiadecki in 1876 was the first to describe tumors in the skin along with the general symptoms of leukemia, anemia, enlarged spleen and lymphatic glands, increase of white corpuscles, and eventually hemorrhages, etc.

His case was a man of thirty in whom nodules from a millet seed to a lentil appeared in large numbers on the face and back; they were slightly raised, movable with the skin, flat, pale red, and smooth for the most part, but some were scaly and others depressed in the center and of lymphoid structure.

Hochsinger and Schiff record a case of a boy of eight months with similar nodules all over the body, but especially on the head and face. In this case the nodules ranged up to the size of a hazelnut, and were yellowish- to brownish-red.

Cases of this type have also been described by De Amicis, while Parvianovitch, Oliver, and Phillipert have reported cases of a different type, in association with leukemia. In Oliver's case, soon after a crushing injury to the metacarpal bone, hard nodules formed under the right supraclavicular fossa, and ultimately there were about sixty hard tumors from a bean to an egg scattered over the trunk, and an ulcerated egg-sized tumor in the axilla; the overlying epidermis was movable, but reddened in the other tumors, some of which became soft. The white corpuscles were enormously increased. At the autopsy there were six orange-sized tumors in the enormous spleen. In Phillipert's case, which began on the temple in a woman, tumors of similar size formed in the head and face, the skin over them being smooth, glistening, and chestnut brown; and other tumors appeared on the mucous membrane of the nose, palate, and pharynx. There were nodules in the breast, but the rest of the skin was free; towards the end the color of the skin became like wax, and the tumors flat and shriveled. Leontiasis of the face was present in this and some other cases, *e. g.*, Gaillard's.

* *Literature.*—A large number of references may be found in Funk's "Clinical Studies of Sarcoma of the Skin," in "Rep. of the Second Inter. Cong. of Dermatology at Vienna," and Unna's "Histopathology," p. 621. Also Nékám, "Ueber die leukaemischen Erkrankungen der Haut." L. Voss, Hamburg, 1899.

Hallopeau and Laffite * have observed a case which was accompanied by eczematous and lichenoid lesions comparable to mycosis, and at a later period, diffuse thickening and reddening of the skin, exaggerating the normal elevations and depressions of the skin, but, unlike mycosis, diffusing gradually in to the healthy skin without forming tumors. The subcutaneous tissue was implicated, with induration, the surface was smooth and symmetrical. In their case the middle of the face was affected from the upper lip to the forehead, with great swelling and redness and exaggeration of the natural folds.

In Neuberger's case there were only two solitary brown tumors symmetrically placed on the cheeks, and they were lobulated, firm, and grew slowly for several years.

A totally different type of case was described by Kaposi under the title of lymphodermia perniciosa. The disease began like a scalding, moist, and intensely itching eczema, and "gradually resulted in diffuse soft swelling and thickening of the affected parts."

Then cutaneous and subcutaneous, doughy or firm, in part ulcerating nodules developed, the glands and spleen enlarged, leukemia set in, and death ensued. There was general *pallor* of the skin and face, ears, forehead, lips, and integument of the thorax, and the arms exhibited shapeless nodular thickening. All the lesions of leukemia were found after death. This Vidal, Hallopeau, Paltauf, and myself regard as a variety of mycosis fungoides, a view which Kaposi himself admits is not improbable. The case I have described as Type III. of mycosis fungoides closely corresponds with Kaposi's in many respects except that the skin was red, not white, but unfortunately I was unable to examine the blood, nor was there any autopsy.

Gaillard's case appears to be of this type, and one of De Amicis' cases was very like it, with enlarged glands, liver, and spleen, but no leukemia. In Riehl's case and one reported by Hallopeau and Laffite there was infiltration, but no tumor formation. In the latter case the infiltration was confined to the middle of the face.

Kreibich has published yet another form of leukemia tumor from a case in Kaposi's clinic,† in which the tumors reached

* *Annales de Derm.*, vol. ix. (1899), p. 236.

† *Archiv. f. Derm. u. Syph.*, vol. xix. (1899), p. 185, with colored plates and references; and Plate CLXXXVII., Kaposi's Hand Atlas.

the size of an apple, affecting the forehead, cheeks, chin, ears, and upper limbs, and subsequently some tumors as large as the fist were felt in the abdomen, the lekocytes were one to twenty-eight red, and the other symptoms of leukemia were present. The patient was a woman, æt. sixty-three, and the first tumors began as a red spot on the cheeks and took six months to develop into a tumor, but others had a more rapid course. The surface was smooth, reddish-violet, thinned, and could not be pinched up. Mayer's case in a man, æt. sixty-eight, was of similar type. These, Oertel's, and Nékám's cases belong to what is called myelogenic leukemia.

It will thus be seen that in association with leukemia there may be, (1) small nodules in the skin and subcutaneous tissue; (2) large tumors; and (3) a diffuse lymphatic thickening and hypertrophy of the integument, with enormously exaggerated folds producing leontiasis on the face, and followed sooner or later by the development of deep-seated convex tumors, the last corresponding to Type III. of mycosis fungoides. Leukocythemia is generally a late manifestation.

Cases of diffuse thickening without tumors are probably of the same kind, only the case has not lived or been observed long enough for the supervention of the final tumor stage. Both these last forms are associated with some form of dermatitis, while in the others the surface of the skin even over the tumor is little, if at all, disturbed.

In some cases the tumors have followed the leukemia, and in others preceded it; and with regard to the latter it may be a question whether the leukemia is not a consequence rather than a cause of the tumor formation. Thus in Palma's case, in which sarcoma of the thymus was found post-mortem, in life, the white corpuscles rose from 1 in 455 to 1 in 73 within a month.

In nearly all the cases the tumors seem to commence as infiltrations between the cutis and subcutaneous layers, and encroach upon both.

According to Pincus,* the histological symptoms of leukemia skin tumors consist in a heaping up of lymphocytes in the

* "Changes in the Skin in Leukemia and Pseudo-Leukemia," F. Pincus, *Archiv f. Derm. u. Syph.*, Band L. (1898), pp. 37 and 177, photographic plates.

corium and subcutaneous lesions which grow in the tumors themselves from the traces of lymphatic tissues normally present (?), and they do not arise from the exudation of leukocytes from the blood current. There are also tumors of lymphatic granulation tissue. There is a possibility that the accumulation of lymphocytes may be due to diminished destruction, instead of increase of lymph cytes in the body.

Oertel and Nékám say that the growths in both leukemia and pseudo-leukemia are formed from emigrant leukocytes, while the growths of lymphoma are metastatic.

No special treatment for the tumors would be required, the general condition claiming all the attention.

Chloroma. Green tumor is another form of neoplasm associated with lymphatic leukemia. In addition to the usual changes in the blood, bone marrow, lymphatic glands, spleen, and other organs, there are lymphoid deposits in the temporal fossæ and periosteum of the bones of the skull and their external and internal coverings. Further, there are green discolorations of the skin diffuse and in tumors which arise in the periosteum and spread by metastasis. Both Dunlop and Byrom Bramwell regard them as lympho-sarcomata, but the cause of the green color is unknown, but, as Dunlop has shown, it quickly disappears on exposure to air and in fluids which do not dissolve fat, thus negativing the theory of the green particles being fatty bodies. There are only twenty-five indisputable cases known, but Bramwell thinks there are similar cases without the green color which would enlarge the number considerably.

Pseudo-Leukemia Cutis of German authors represents the skin changes observed in a few cases of Hodgkin's disease, and is what we should call lymphadenoma cutis. According to Joseph, who has had two cases, in one form, nodules both cutaneous and subcutaneous were distributed in large numbers on the neck and chest; they vary from a pea to a nut in size, project above the surface, but the epidermis over them is normal. They are movable, painful, and hard to the touch, and structurally consist of large and small round cells with bright nuclei and nucleoli; there are some fusiform elements and giant cells.

Lymphorrhea and death ensued shortly after removing some of the enlarged glands and skin tumors. These nodules resembled those of the first type described under leukemia. In the other form of which Arning,* Bowen, and Wagner, as well as Joseph, have each had examples, in addition to the tumors there were also intensely itching prurigo-like papules, and the general and skin symptoms were much ameliorated by arsenic. These papules † may also occur without the tumors. In neither form was there any increase in the white corpuscles of the blood, and the usual symptoms of Hodgkin's disease with enlarged glands and spleen were well marked. Gillot, Landouzy, and De Amicis have had similar cases.

Arning has had another case which he refers to pseudo-leukemia, a girl, æt. fourteen, who was sent to him for what was supposed to be lupus of the nose, but it had a waxy transparent look, was firm and painless, had never ulcerated, and there were no lupus nodules.

She had also nodules on the mucosa of the lower lip and hard palate; and others in the skin of the face, neck, and upper extremities of varying size and consistency. No enlargement of glands or blood changes, but an immense spleen. Hypodermic injections of arsenic diminished the spleen to one-half, and the tumors also became smaller, some disappearing completely. There were no prurigo-like papules, as in the previous cases.

Other skin changes observed besides the prurigo papules are lichen papules (V. Recklinghausen); pityriasis rubra (Peter); desquamation in large lamellæ with the skin pale yellowish (Wassermann). The last author also, in the same case, found the skin in certain points, especially on the face and legs, strongly retracted, atrophied, and shining, very adherent to the subjacent tissues, and feeling like parchment; also some lineæ atrophicæ. I have also had a case in which severe pruritus in the legs and feet was one of the early symptoms, when there were only a few cervical glands enlarged, and as there was a strong family history of phthisis they were diagnosed as tuberculous. Subsequently all the symptoms of Hodgkin developed and pea-sized pruritic nodules appeared. Hallo-

* Abs. *Brit. Jour. Derm.*, vol. iv. (1892), p. 295.

† Bowen says that they have the same structure as true prurigo papules.

peau and Laffite have also noted pruritis without other skin lesions.

According to Pincus (*loc. cit.*), the tumorlike formations occurring in lymphatic leukemia are not to be distinguished from those of pseudo-leukemia. The skin localizations are clinically and histologically identical, the general affections also cannot be distinguished by constant clinical differences in the blood; while qualitative blood conditions and all the other symptoms and the pathological anatomy are identical. Therefore these cases form one group to be contrasted with myelogenic leukemia, *i. e.*, cases in which myelocytes can be found in the blood. Wende's * case rather supports this, but he regards it as an instance of conversion of Hodgkin's disease into leukemia. A man, æt. twenty-six, was first seen on April 26, 1900, who stated that on December 1, 1899, he first noticed a slight induration on the left temple, which by April was an oval dusky protuberance 10 cm. across and non-adherent. There was also a deep-seated induration in the center of the left cheek. There was marked enlargement of glands, but very slight blood changes.

In the left inframammary region were two lumps the size of a filbert, and round the nipple there was a large patch like that on the temple, while in the abdominal wall were seven deep-seated nodules from a pea to a hickory-nut in size, the largest of which was cyanotic and brown. Chocolate-colored blotches mottled the whole chest and back, and all the superficial cervical glands were enlarged, especially on the left side.

Temporary improvement was produced by the injection of Fowler's solution, so that all lesions except the staining had disappeared in six weeks.

On July 1 a tumor appeared suddenly on the scalp, followed by two on the back. A few days later extensive purpura supervened, and there was enlarged spleen, leukemia 34,000 to the cubic millimeter, swelling of mucous membranes and death on July 30. The cutaneous lesions consisted of lymphoid cells going down to the subcutaneous tissue.

Unna † describes these tumors as "a form of granuloma

* *Amer. Jour. of Med. Sciences*, December, 1901. Abs. *Lancet*, March 15, 1902, p. 752.

† "Histopathology," p. 621.

closely resembling lupus and the tuberous syphilids." Graham Little* agrees with this, and the examination of some small yellowish growths, of which there were hundreds, showed deep-cell infiltration most abundant in the middle zones of the cutis, and especially affecting, as also noted by Arning, the sweat coils. The cells were what he calls "daughter plasma-cells." Mast cells also were abundant, but there were no giant cells.

Pincus wishes to separate mycosis erythrodermia from mycosis fungoides and join it with Kaposi's lymphodermia perniciosa into a special group with the symptoms of (1) erythrodermia; (2) diffuse thickening of the skin as seen in leontiasis of the face; and (3) by co-existing leukocythemia, which is usually a late symptom, but I do not agree with this view.

Treatment.—Arsenic injections offer the only chance of amelioration, and Touton and Zeisler have had cures from this method. The formula given by Johnston is 7 cgm. of cacodylate of sodium, 2 cgm. sodium arsenite, water, and Fowler's solution, of each 5 drops, increased gradually to toleration. Such doses would only be justifiable in desperate cases.

MYCOSIS FUNGOIDES.†

Deriv.—μύκης, a fungus.

Synonyms.—Granuloma fungoides (Auspitz, Payne, and others); Eczema hypertrophicum or tuberosum (Wilson); Inflammatory fungoid neoplasm (Geber and Duhring); Fibroma fungoides (Tilbury Fox); Ulcerative scrofuloderma (Van Harlingen); Lymphadénie cutanée; Lymphodermia perniciosa (Kaposi); Sarcomatosis generalis (Kaposi); Multiple sarcoma of skin (Nevins Hyde); Multiple fungoid papillomatous tumors (Köbner); Lichen hypertrophique (Hardy). (Hardy).

Alibert, in his great work of 1814, first described and figured in Plate XXXVI. a case of this disease in a Parisian, under the name of "pian fungoïde," which he regarded as allied to yaws,

* *Brit. Jour. Derm.*, vol. xiv., June, 1902, p. 217.

† *Literature.*—Author's Atlas, Plate LXXVIII. St. Louis Atlas, Plates XIV. and XVI. Vidal and Brocq, "Mycosis fongoïde." *La France Médicale*, Nos. 78 to 85, tome ii., 1885, gives a full account, with bibli-

and identical with Amboyna button, or pian of the Moluccas; in his 1832 8vo and 4to editions, he changed the name to mycosis, referring to its external resemblance to a mushroom, and not to a theory of its pathology. Bazin in 1862 was the first to give a clear account of the disease.

That Alibert was not far wrong as to its clinical resemblance to yaws is shown by the fact that so great an authority on yaws as Gavin Milroy * relates a case, which is clearly the disease under consideration, as an example of yaws in a man who had never resided out of England. Subsequent French writers, especially Bazin, Hardy, Besnier, Vidal, Brocq, and Hallopeau, have made our clinical knowledge of the disease pretty complete. Isolated cases have from time to time been reported under various names, of which some are given above. English, German, and American authors now acknowledge their identity with Alibert's disease. In England, of late years, many cases have been shown at the Dermatological Society.

The cases may be divided into three distinct classes or types.

In **Type I.**, which is the most common, there is some form of dermatitis antecedent to the development of tumors, the premycosic stage of French authors.

ography to date. Auspitz, "Granuloma Fungoides," *Viertelj. f. Derm. u. Syph.*, vol. xii. (1885), p. 123, with colored plates, and Hochsinger u. Schiff, in vol. xiii. (1886), pp. 361, 389. Payne, "Granuloma Fungoides." *Path. Trans.*, vol. xxvii. (1886), p. 22, with colored plates and partial bibliography. Tilden, "Mycosis Fungoides," *Boston Med. and Surg. Jour.*, October 22, 1885, p. 386—a good account and full bibliography. Funk, *loc. cit.*, see Sarcoma. Ledermann, two cases, *Archiv f. Derm. u. Syph.*, vol. xxi. (1889) p. 683, gives full bibliography. Stelwagon and J. L. Hatch, "A Study of Mycosis Fungoides," with a report of two cases; the histology and bacteriology were thoroughly gone into, and the bibliography from 1885 given, but Hallopeau's case, alluded to, turned out to be general lupus erythematosus. Besnier, "A Contribution to the Clinical History of Mycosis Fungoides, especially of the Pre-mycosic Period," with two new cases, *Jour. des Maladies Cutanées*, vol. iv. (1892); and *Ann. de Derm. et de Syph.*, vol. iii. (1892), pp. 242 and 987, with Hallopeau. Hallopeau has published several cases with interesting features in the *Ann. de Derm. et de Syph.*, vol. iv. (1893), to vol. ix. (1898), and Besnier and Hallopeau read a paper on Erythrodermia prémycosique at the Vienna Dermatological Congress, 1893, when there was also a discussion on the lymphangitis form. "Mycosis Fungoides," a monograph by Max Wolters: "Biblioth. Med. Abth. D.ⁿ Derm. u. Syph.," 1899, with bibliography and plates.

* *Med. Times and Gazette*, February 17, 1877, p. 169.

In **Type II.** the course is marked by recurrent attacks of lymphangitis leading to an elephantiasic form of thickening of the skin, with tumor development for the final stage. This is the rarest form.

In **Type III.** the tumors develop without antecedent dermatitis, the "tumeurs d'emblée" of French authors, and the course is shortened.

All forms are fatal, but the premycosic stage of Type I. may last for many years.

Mycosic fungoides is fortunately a rare disease, but thirteen cases of it have occurred in my private and public practice in the last few years, and I have seen many others at the societies and elsewhere. Seven of my cases were of Type I., one of Type II., and five of Type III.

In Type I. the antecedent dermatitis is of the most variable description, but whether all cases are mycosis fungoides from the first, and what appears to be an ordinary dermatitis is only simulated, is a disputed point. At all events, some cases are recognizable as mycosis fungoides from the first, while others are not so until the tumor stage is reached. Probably the most common form of eruption is of an erythematous character, the "erythrodermia" of Besnier; in it there are erythematous discs slightly raised at the border and firm to the touch, or there may be red urticaria-like lesions, which Kaposi says do not itch, but this is not true for all cases. These extend into diffuse infiltrations and assume a brownish tint, and when on the face closely simulate lepra, as in a case shown to me by Stephen Mackenzie. Duhring's case began with acute urticaria, then developed a universal vesicular eruption which lasted a week, severe pruritus followed, and in six weeks from the onset the first tumor appeared. Almost equally common is the development of a moist or dry eczema;* the case of Fig. 2 of my Atlas which was under Colcott Fox's care was described by him as like "inveterate scaly eczema," while Lukasiewicz described his case as an "eczema rubrum madidans."

In one of my cases, when I saw him shortly before the development of the tumors, the eruption appeared absolutely indis-

* At a discussion at the Amer. Derm. Assoc. many disputed the eruption being really like eczema, but so many good observers from Hebra downward have so described it that it must be true for some cases.

tinguishable from pityriasis rubra, and it had been so for three years; he had been subject to psoriasis for twenty years and for the last eight years without intermission. Orange-red plaques, which gradually increased in number, size, and later on in thickness, marked the onset of another case which was fatal in six years.

In two of my cases, both ladies, there was an eruption which at first sight was psoriasiform, but which was really a distinctive eruption. This form occurs in flat, well-defined discs of a pale red color covered with fine scales, rather scanty on the central part, but more marked and slightly crusted on the well-defined border.

These discs coalesce and inclose oases of healthy skin, looking depressed in contrast with the prominent border of the diseased surface, recalling, except for the scaliness, the appearance often seen in the early stage of nodulated leprosy. Subsequently in this, as in the other form of premycosic dermatitis, the affected part becomes thickened and infiltrated, and from this tumors form. Hallopeau and Bureau describe a case with this form of eruption; and Hallopeau and Jeanselme also had a case in which the first eruption was scarlatiniform, followed by large flaky desquamation. All forms of premycosic dermatitis are attended with pricking, burning, and itching, usually severe, sometimes moderate, but rarely absent.

I have, however, met with three cases, all remarkably alike, in which there was no itching or any other subjective symptom. One was a man of thirty, in whom the eruption had been present for ten years, and while fresh lesions appeared from time to time, none had gone away in spite of the most varied treatment. The eruption was general, but on the trunk the lesions were thickly placed in horizontal, elongated, faintly rough patches, one to three inches long, as if streaked with the finger; pale red, almost yellowish in tint, rather well defined, though the edges were not sharp, and there was slight thickening. The patient was a healthy man and no etiological factor was ascertainable.

In a second case, a man of thirty-seven, the eruption had been present five years, and was limited to the limbs.

In a third, a lady of forty-seven, the eruption had been present nearly ten years. It began as a single patch on the arm, and

spread all over the body from that. The patches were ill defined and pale red with slight powdery roughness, and some were decidedly thickened. They died down to some extent in the summer and recrudesced in the winter, when it smarted but never itched.

Sometimes the erythematous lesions continue to develop after the tumor stage is reached, and I saw a case in which tumors on the face appeared first, and soon after erythematous discs formed on the upper limbs.

This premycosic period may last for months or years, the disease remaining quite superficial; then it gets deep, involves the whole thickness of the skin, which becomes infiltrated and stiff, from a sort of hard edema like that of leprosy; but the redness *pari passu* increases, and the papillary body thickens into papules or plaques, forming the lichenoid plaques of Bazin. These may disappear rather rapidly, but soon re-form on the same or different parts; or they may develop more and more above the surface till they constitute true tumors, and bullæ sometimes develop on and round the extending infiltrations; occasionally, the tumors form on the healthy skin as well, and in one of Stelwagon's cases the tumors developed almost simultaneously with the erythema, an eruption, which appeared to be erysipelas, being the immediate antecedent where the tumors were about to appear.

The tumors which mark the third stage of the malady may commence in or involve any part of the body surface, including the mucous membranes, especially the uvula and palate, but the larynx (De H. Hall), the pharynx (Besnier), and the bladder (Duhring) have been attacked. The viscera almost always escape even at the end, though a nodule on a kidney was observed by Hallopeau in one case. Crull also found a nodule in one kidney and in the lung. Pye-Smith found one adrenal converted into what looked like a round-celled sarcoma.

In one of Kaposi's cases, nodules were found in various viscera; and in one reported by Malherbe and Monnier * a woman of thirty-eight, who died in two years, there were tumors in the lungs, the heart, the kidneys, uterus, both ovaries, and the pancreas. There were also tumors in the breast, but the diagnosis is not indisputable.

* *Jour. Mal. Cut.*, vol. xii. (1900), p. 307, abs.

The skin tumors are of a bright, deep brownish, or bluish-red, rarely pale or yellowish-white, rather sharply defined, roundish or oval, at first merely convex projections, but soon becoming more elevated and sometimes slightly pedicled, and from a lentil to the fist in size. The large ones, from confluence, are covered with tense, shining epidermis, or they may be scaly or slightly crusted with horny epidermis.

They may disappear in the course of a few days, without ulceration, and leave no trace; but more frequently they ulcerate very gradually, the epidermis falling off, and excavations or abscesses may be formed in them. By this time "the fungoid state" is reached, in which variously-sized, fungating tumors are developed.

A characteristic formation is that of a round horseshoe-shaped or crescentic ulcer with a raised rolled border, a quarter of an inch wide in a big one, forming a collar from which the central fungating mass projects sometimes bright red, but more frequently with a sloughy covering. Even at this stage the tumor sometimes sloughs out and heals up, but more frequently extension takes place, the collar and central portion enlarging *pari passu*. There is always more or less sloughing in some of the tumors, but in a case of Hallopeau's massive gangrene of the scalp occurred, exposing the skull.

In the tumor stage sensibility is diminished, and pain, itching, and smarting have disappeared almost entirely in many cases, but sometimes the itching persists. The lymphatic glands generally may be enlarged. In hairy parts the hair falls off over the tumors and eruptions, which may be seen simultaneously on the same patient. The general health is but little changed, but after a variable time cachexia sets in, with rapid emaciation, and often obstinate diarrhea or pulmonary complications usher in the end. According to Sabouraud and Leredde, death is nearly always due to streptococcal infection. In one of my cases * there was a boardlike infiltration extending over one side of the neck, which at the autopsy Pernet found to be the solid, uniform infiltration without pus which is characteristic of this form of streptococcal infection.

The total duration varies from six months to five or even fifteen years. Bazin records a case of complete recovery, the

* Lovelace, U. C. H.

tumors having rapidly and permanently disappeared after an attack of erysipelas. Funk regards this case as an example of idiopathic multiple hemorrhagic sarcoma. In a case which I only saw in the premycosic stage, but in which the diagnosis was made independently by G. H. Fox of New York as well, after the patches had become greatly raised, and a tumor the size of an egg had formed behind the knee, she got well in a month under a course of purgation.

Type II. is well represented in the following case. A doctor, æt. forty-eight, had a kick on the knee, followed by suppuration over the head of the tibia, and in the groin and thigh. Six or seven months from the onset he had lymphangitis in the groin, which was called erysipelas. A year later his skin was first attacked, beginning on the chest and gradually extending. In its early stage the eruption consisted of round millet-seed-sized, red papules seated at the hair follicles and slightly flattened at the top, and there was a minute horny spine in the

Fig. 61.—A portion of a mycosis fungoides tumor highly magnified. The cells are imbedded in a delicate fibrous stroma. Obj. $\frac{1}{8}$ P. and L., ocul. 2-in.

center in those on the neck and on the back, and a slight roughness in the rest. At first they were closely aggregated, and developed into patches later. The papules coalesced and formed a diffuse brick-red erythema, with infiltration of the skin extending all over the trunk, face, and neck, and upper part of the limbs. It was attended with great irritation at night, but only on exposure in the daytime. There was a dry, powdery scaliness round the hair on the face, and many of the hairs broke off, and occasionally he had scattered pustular folliculitis. The skin of the brows was thickened and corrugated like

that of a leper, but the color was bright red, and this condition was much increased after an attack of influenza, when the whole skin except the lower segments of the limbs was like that of a boiled lobster, but smoother than it had been.

From time to time localized swellings appeared in various parts of the body and subsided in from three to six days. Every two or three months, also, he had attacks of lymphangitis, preceded by an intensification of the itching and pain of the following kind. Intense pain under the lower third of the left thigh came on suddenly in the night; after two hours the pain became less intense, and the lymphatics of the limb became cordlike; the redness and intense tenderness all round the thigh lasted forty-eight hours, and gradually subsided after applying a hot-water bag. He had also several attacks of what he called acute weeping eczema, especially of the head, feet, and face. The attacks of lymphangitis naturally increased the infiltration, which was especially noticeable on the face and ears. About a month before the end the face was enormously swollen and unrecognizable, the furrows obliterated, all the hair was lost, and the scalp swollen, so that the head and face were like a huge globe, the lobes of the ears were as big as walnuts, and the rest of them much swollen but not misshapen. On the scalp were numerous growths in the shape of convex eminences which had been developing about six weeks, and were deep in the cutis or subcutaneous tissue, and the whole of the upper part of the chest was covered by similar but more distinctly convex tumors, closely aggregated all over, although they had only been noticed for a fortnight. There were similar but less numerous growths in the upper part of the trunk, but none on the rest of the body. All these symptoms increased to within a few days of his death, when some of the swelling subsided, and although the tumors extended to the epigastrium, they remained deep in the cutis and never broke down.

Kaposi, under the title of lymphodermia perniciosa, described a similar case in 1885, but there was pallor of the surface, great increase of white and diminution of red blood corpuscles, with enlargement of the spleen and lymphatic glands. (See Leukemia Cutis.) Hallopeau's "red man" seemed to have commenced like my patient, and a similar swelling of the features occurred in Jamieson's case.

In J. Hutchinson, Jr.'s, * case of hypertrophic swelling of the face, body, and limbs, the skin was in thick folds as if it were too big for its owner, following repeated attacks of erysipelatoid lymphangitis; all the nails and hair were shed, and the glands enlarged, but there was no leukemia; no tumors developed before death. Hallopeau had a similar case.

In Type III. of my five cases, in one, a man of fine physique, æt. thirty-three, the first symptom was a tumor the size of a walnut, which appeared in the abdominal wall without any antecedent lesions, and rapidly increased to the size of an orange, oozed a green fluid, was poulticed and sloughed out. Soon after this he had red spots half an inch in diameter, which lasted a fortnight; three months later a tumor developed on the hard palate, which later on also sloughed out. From time to time tumors appeared and disappeared, and at one time he shed all his finger-nails and nearly all his hair; and after a severe attack of pneumonia with high temperature all the tumors went, leaving only a few healing ulcers. He was nearly well for some time after this, but never quite free from sores; subsequently tumors redeveloped, he had epileptiform convulsions, symptoms of thrombosis in the cerebral vessels, and he died three and a half years from the onset.

Most of the *tumeurs d'emblée* type run a much shorter course than this, as in my second case. A man, æt. sixty-five, first noticed finger-tip red spots on his forehead three months before I saw him; they got larger, more prominently convex, a deep dusky red, and a slight scaly crust formed on some of them, due to plugs in the sebaceous orifices; the rest were smooth. One on the right temple developed more rapidly, and broke down when it was five weeks old, and formed a fungating tumor one and a half inch in diameter, arising out of a projecting red rounded collar or ring about a fifth of an inch thick. Another tumor on the thigh was as large as a hen's egg, and had not ulcerated; it was excised, and, as usual, did not return.

There were numerous other tumors or infiltrated patches over the trunk and face in various stages, and the fungating tumors continued to develop as a whole, although many of the growths in the pre-ulcerative stage involuted under treatment. The

* *Brit. Jour. Derm.*, vol. vii. (1895), p. 1, illustrated; and Jamieson's, in *Edin. Med. Jour.*, March, 1893, also illustrated.

right temple tumor became a fungating growth several inches in diameter, with sloughing center, and numerous others on the face were broken down, and he died exhausted in five months from the onset. There was no visceral complication.

In a third case the tumors commenced in the groin and forehead at the age of thirty-six, and became in six months very numerous on the face and limbs, but very few came on the trunk. They were about three-quarters of an inch in diameter, like half a cherry, were slightly crusted, but not ulcerated. The patient did not wait for the *dénouement*, but in despair committed suicide. He was a tall, vigorous man, and as there was a history of syphilis, he had had strong anti-syphilitic treatment without effect on the lesions.

In the second case the mode of development in the neoplasms could be traced in different stages on the body.

The first lesions were papules closely aggregated into small patches; the papules were pale red, pin's-point- to pin's-head-sized, with a central horny punctum; here and there there was partial coalescence, and the larger papules had two or three horny puncta. In the next stage the papules enlarged peripherally, flattened out somewhat, and were semi-coalescent in the central portion, and had acquired a deeper red tint, while still discrete and pale at the periphery.

Next the coalescence became more complete, and at the center formed an infiltration, in which the components were still indicated by fine lines, and finally the whole patch was a uniform infiltration, but still with the shallow sulci dividing it.

The tumors were a further development from these.

According to Hallopeau the lymphatic glands are not enlarged in the *tumeurs d'emblée* type, and were not markedly so in my cases.

In a case of Dubreuilh's the first growth appeared in the upper eyelid of a man of forty-four, other tumors followed on the face and axillæ, and three months from the onset urticarial patches appeared with itching, and from that time formed part of the disease.

Etiology.—Very little is known under this head. Tilden's, Hyde and Montgomery's, and my own analyses show that two-thirds of the cases are of the male sex. Three-quarters of the patients are over thirty years old, from forty to fifty and fifty

to sixty being the most common decades, the extremes being fifteen (Gastou and Sabareanu) and seventy-three years (Hallopeau). I have met with one which began at eighteen. No two instances have occurred in the same family, and, unlike yaws, it is not contagious.

Pernet has noted that a large number of the patients come of a long-lived family, and they are generally in good health when attacked and for a long time afterwards. Although many of the cases with dermatitis antecedent to the tumors are undoubtedly mycosis fungoides from the onset, the evidence is in favor of the disease developing in some instances on an ordinary dermatitis. One of my cases was certainly subject to ordinary psoriasis for many years, and was indistinguishable from ordinary exfoliating dermatitis for three years before the onset of the tumors, and there are many similar instances; but Besnier and other high authorities think they are all mycosis fungoides from the very first, and that microscopic examination would prove it. Besnier also thinks that the tumors never start from quite healthy skin, but in one of my cases they certainly did so.

Pathology.—The preponderance of opinion, and the fact that partial improvement may be obtained in some cases by arsenic and salicin, suggest that the morbid phenomena are the result of bacterial action, either directly or through their toxin, although the organism has not yet been identified. The growths therefore belong to granuloma, and not to sarcoma, lymphosarcoma, or lymphadenoma, as some of the earlier writers have suggested. Anatomically the tumors consist of round cells supported by a scanty delicate reticulum, which replace the normal tissue of the cutis, the boundary between the healthy and diseased tissues being ill defined.

Anatomy.—The histology has been investigated by a host of observers, but only those made by modern methods will be considered. Of these Unna, Leredde, Hyde and Montgomery, Galloway and Macleod,* appear to me of most value. They all advocate the diagnostic importance of biopsy in an early stage.

Leredde has examined in the premycosic stage apparently healthy skin

*Unna, "Histopathology," p. 509. Leredde, *Annales de Derm. et de Syph.*, 1894, p. 509. Hyde and Montgomery, *Trans. Amer. Derm. Assoc.*, 1898, p. 42; a good review of previous observations and references. Galloway and Macleod, *Brit. Jour. Derm.*, vol. xi. (1900). May and June.

and erythematous plaques, and has found changes in the shape of proliferation of fixed cells round the vessels; mast-cells; perivascular foci, consisting of a reticulum including fixed and lymphocyte cells; the foci form in the subpapillary layer and invade the papillæ at a later stage; there are vascular changes with a special type of giant cells.

Unna lays great stress on the multiformity of the cells, which is confirmed by others. He examined a case of the seborrheic eczemaform type in which, therefore, the epidermic changes were conspicuous. He regards it as a mixed infection with seborrheic catarrh, but this view is not generally accepted.

Hyde and Montgomery regard the disease as *sui generis* from the earliest pruritic symptoms, differing from infectious granulomata, in that its manifestations are limited to the skin with a few doubtful exceptions.

Vollmer thinks that in addition to the connective tissue cell changes those in the epithelium, edema of stratum granulosena, etc., are also characteristic.

Galloway and Macleod, from the examination of three cases, find the following:

A. In the premycosic stage. 1. A connective tissue cell proliferation around the blood-vessels of the whole corium and the structures in it, commencing in the subpapillary layer. In the early stage the infiltration is on the upper part of the corium only. 2. These cells are of five types—(*a*) Large, oval, fusiform, or roundish, with a large nucleus, with mitotic figures in the early, but amitotic in the late stage; (*b*) Small round cells a little larger than leukocytes, with nuclei like *a*; they were the products of the rapid amitotic division of *a*; (*c*) Mast cells, but not in increased numbers, and varying in size from *a* to *b*; (*d*) A few plasma cells of the larger variety; (*e*) Imperfect giant cells, with eight to ten nuclei, were sometimes seen. It is evident that *a* and *b* are numerically the most important elements. The epidermic changes were secondary, and showed active mitosis of the prickle cells and downgrowth of the interpapillary spaces.

B. In the tumor and breaking-down stage, there was increased cell proliferation, with tendency to break down very marked in the fungating stage, while the granuloma encroached on the epidermis, flattening and destroying up to the stratum corneum.

Bacteriological investigation yielded no practical result, and they could not find McVail's* "short white bacillus." They differentiate microscopically other granulomata as follows:

In *syphilis* the cell proliferation is less multiform, plasma cells are more numerous, the vessels more dilated, and the cell proliferation round them is at its maximum and the collagen is increased.

In *mycosis* multiformity in the cells is characteristic, plasma cells are rare, cell proliferation round the vessels moderate. In the later stage the crenation and fragmentation of the cells is a distinguishing feature.

In *tuberculosis* the granuloma is almost made up of plasma and its

*Abs. McVail and W. D. Murray's case in *Brit. Jour. Derm.*, vol. x. (1899), p. 169. The bacteriology appears to have been carefully done.

daughter cells. There are giant cells with central caseous degeneration which are never present in mycosis. The collagen bundles disappear in an early, while in mycosis they only go in a late, stage.

In *round-celled sarcoma* the mesoblastic cells are uniform in size and shape. The deeper layers of the cutis are first affected, and the epidermis not at all unless the sarcoma breaks down. In the spindle-celled form also the cells are more uniform and rarely show karyokinetic figures.

In *leukemia cutis*, the infiltration is purely leukocytic, there is no fixed cell proliferation, mitosis, or imperfect giant cell formation.

Diagnosis.—At the beginning, when apparently simple eruptions precede the formation of the tumors, the diagnosis may be very difficult, even Hebra having once diagnosed a case as eczema, and it may also be mistaken for erythema exudativum, psoriasis, pityriasis rubra, some form of lichen, or even nodulated leprosy.

The irregularity of distribution, the sharply defined border, and the greater thickening, which is more than in erythema, eczema, or psoriasis, might excite suspicion.

The oases of healthy skin appearing depressed by contrast with the raised diseased areas inclosing them are very suggestive.

There is generally not so much discharge as in *eczema*, with the same amount of hyperemia; not the heaping of silvery scales of *psoriasis*, neither is it in the psoriasis positions; while it is too chronic for *erythema exudativum* when it is smooth, and very often there is too much scaliness.

The cases which imitate pityriasis rubra may be indistinguishable, except histologically, until thickening of the tissues occurs. The licheniform cases do not exactly imitate the recognized forms of lichen; even when the papules are flat, they are not angular, and of the color of lichen planus.

In the leprosy-like cases the resemblance is limited to the face, and there would not be the leprosy nodules, the general or nerve symptoms, and the leprosy bacilli, and in many cases the patient would not have been in a leprosy district; and although on the body, similar oases of healthy skin are often seen in the early stage of leprosy, the surrounding leprotic infiltration is not scaly, but a dull red or brownish erythema quite unlike that of mycosis fungoides.

The itching, too, is generally more severe than it would be in all but eczema, and enlargement of the lymphatic glands is

general and pronounced without leukemia. Finally, Besnier says, "In all cases of ambiguous pruritic dermatoses which are prolonged and rebellious to ordinary methods of treatment, the possibility of the disease being the premycosic period of mycosis fungoides should be borne in mind."

In doubtful cases, wherever possible, a piece of skin should be excised and examined microscopically.

The lymphangitic cases, which soon develop into general redness and thickening of the tissues, *l'homme rouge* of French authors, are very distinctive, even before the enormous hypertrophy occurs which brings the skin in thick folds.

The tumor development is often a late feature, and there may never be fungation, as the tumors are more deeply seated as a rule. The enlarged spleen and glands and the blood changes are confirmatory.

When the fungating tumor stage is reached there can be no difficulty. In the more localized forms, where there is no preceding eruption, it may be mistaken for *sarcoma* or *carcinoma cutis;* the absence of early implication of the lymphatic glands, although tumors in the groin may simulate them, and the comparative painlessness would perhaps be a help to a right conclusion, while, as a rule, the course would be slower, and the internal organs would never be implicated.

It would help if proof could be obtained in sarcoma that it started from a deeper structure. Further, it is rare for sarcomata to disappear spontaneously, while it is a common feature of mycosis fungoides.

Prognosis.—With the exception of Bazin's and Geber's cases, and one of my own, the result has invariably been fatal, the extremes being nine weeks (Gaillard) and twenty years, the widespread cases, which commence as apparently simple inflammations, being much less malignant in their course than the cases which begin at once as tumors. With this exception we have no data to guide us as to the course the disease will take.

Treatment.—Nothing has, unfortunately, appeared to exert any influence in stopping the course of the disease, and we are so completely at sea as to its true etiology and pathology that the therapeutics must be entirely empirical.

Arsenic has, of course, been tried most extensively. Stelwagon tried arsenic internally and by subcutaneous injection

most thoroughly in one case, but with no good result; nevertheless, it has been of some benefit in other cases, delaying the course of the disease apparently, and many of the lesions, even in the tumor stage, involuting. Salicin in my hands has done even better in producing involution of the tumors in the pre-ulcerative stage; and, in one case, thyroid extract had a similar effect. When, however, ulceration or fungation has set in, none of these drugs are of any use. In one case in my cognizance cacodylate of soda was tried, but had less good effect than injections of Fowler's solution.

In one of my cases all the non-ulcerating tumors cleared up under salicin, while the ulcerating tumors proceeded unchecked and killed the patient by septic absorption, in spite of iodoform and other local antiseptics. I tried injections round the tumors, in one case, of both carbolic acid and perchlorid of mercury, and also thiosinamin; and Mannino tried resorcin injections, but without any success. Anything that produces a high temperature has a good effect. Thus one of my patients was almost cured, and of course almost killed, by an attack of double pneumonia. Another improved very much during a malarial febrile attack, and, as before mentioned, erysipelas has quite cured one case, and a controllable erysipelas serum would be worth trying in such a desperate disease, although Besnier tried streptococcus serum, and Gilchrist Coley's fluid unsuccessfully, and I know of another unsuccessful case.

The other case, in my own cognizance, which got well was due, as far as I could ascertain, to continued purgation given by a doctor who did not recognize the disease, but wished to purify the blood. These facts all point to the existence of a toxin as the pathogenic factor, and make one hopeful that a successful treatment may be discovered.

According to Vidal and O. Simon, pyrogallic acid in the form of ten to twenty per cent. ointment is of service as a local application. Besnier recommends camphorated naphthol in the same way, guarding the surrounding skin, and watching the urine so as to stop as soon as there are signs of absorption, as both the drugs are dangerous to life if absorbed in large quantity. Besnier has also given camphorated naphthol in drop doses in a capsule by the mouth, and Brocq has injected it into the tumors with some improvement. Norman Walker relates

a case of Allan Jamieson's in which local improvement ensued after exposure to the Röntgen rays; and Brooke has had a similar experience in a youth with multiple nut-sized tumors, but the diagnosis was not conclusive in the latter case.

YAWS.*

Deriv.—From Carib, *yáya*, the meaning of which is doubtful.

Synonyms.—Frambesia (*Fr.*, Framboise, a raspberry); Pian; *Ger.*, Beerschwamm; Paranghi (Ceylon); Amboyna button; Coco (Fiji), etc. Tonga (New Caledonia).

Definition.—An endemic specific and contagious disease, characterized by raspberry-like nodules, with or without constitutional disturbance.

Yaws is a disease confined to tropical climates. It is found chiefly on the west coast of Africa for about 10° each side of the equator; also on the east coast and in the central regions, rarely in the north; in Madagascar and the Mozambique extensively; in Ceylon; in Hindustan (Pondicherry and Assam);

* *Literature.*—Government Report on Yaws in West Indies, by A Nicholls, with colored illustrations (Eyre and Spottiswood, 1894). In New Sydenham Society, vol. for 1897, of selected essays, there is an epitome of this Report by Wallbridge and Daniels, with critical observations; "The West Indian and Fijian Disease"; a translation of Charlouis's valuable paper of 1881, on Yaws in Java; also of Breda's paper on Boubas in Brazil, with a different symptomatology to the rest, as they were all cases of long standing. "Yaws," by J. Numa Rat, with preface by J. Hutchinson (London, Waterlow, 1891), with bibliography to 1887. Gavin Milroy, Report on Leprosy and Yaws in the West Indies in 1873; also in *Med. Times and Gaz.*, November, 1876, and February, 1877; also January, 1880, an article by Nicholls, and, in April, 1880, an article by Bowerbank. In *Brit. Med. Jour.*, vol. ii. (1881), p. 712, is a good article on Parangi, abstracted from Kynsey's Report to the Government of Ceylon: the Report itself, with an excellent series of original drawings, is in the library of the College of Physicians. Hirsch's "Handbook of Geographical and Historical Pathology," Syd. Soc. ed., vol. ii. p. 110, contains a good account of yaws and button scurvy, with bibliography. Manson's "Tropical Diseases," 2d ed. (1900), p 455. His description is taken chiefly from Nicholls', and differs in some points from the one here given. Jeanselme, "Pian" (as observed in French Indo-China), (*La Prat. Derm.*, vol. iii., 1902). Also recent issue illustrated, N. Syden. Soc. Atlas, 1902.

in some of the islands of the East Indies; in the Oceania groups, and in the West Indies, especially Dominica and Jamaica; and in tropical South America, especially Brazil, Central America, and Mexico. It is probable that the button scurvy of Ireland, now extinct, but described by various writers from 1823 to 1857 as a contagious disease which was prevalent in the south and interior of the island, was closely allied to yaws, if not identical with it.

The first mention of the yaws disease is by Oviedo (1535), who met with it in St. Domingo; but it is to Sauvages at the end of the eighteenth century, and to writers of the last thirty years, such as Gavin Milroy, Imray, Nicholls, and Bowerbank in the West Indies, Kynsey of Ceylon, MacGregor of Fiji, Numa Rat of the Leeward Islands, Charlouis and French colonial surgeons, that we owe our present knowledge of it.

Numa Rat, from whom the following account is chiefly taken, as Kynsey did formerly, divides the disease into four stages—incubation, primary, secondary, and tertiary; now, however, Kynsey considers that it should be incubative, febrile, and eruptive, and that if there are sequelæ they are accidental.

The incubation stage is taken from the date of infection to the first appearance of the local lesion at the site of inoculation, and varies from three to ten weeks,* the former being the usual period. There is some dryness and branny desquamation of the skin, especially round the lesion, which may recur or persist into the later stages; beyond this there are usually only vague symptoms, perhaps palpitation, vertigo, and edema of the limbs and eyelids. The primary stage is that of the initial lesion, and consists of a pin's-head papule, which at the end of seven days has a yellow cap; in another week the fluid dries into a scab, beneath which is an ulcer with perpendicular edges and clean base. This heals in a fortnight under treatment, leaving only a superficial scar, or it may take two months without treatment. Less commonly, the papule may slough out, leaving a clean ulcer the size of a florin, or it may be a non-ulcerating nodule, which becomes absorbed with desquamation over it, or it may be deep-seated, and ultimately discharge through several minute openings. Finally, the local lesion may be, if not missed

*Experimental inoculation gives a shorter period, viz., twelve to twenty days (Paulet), fourteen (Charlouis).

altogether, unobserved. The initial lesion is most frequently found on the lips, areola of the breast, the groin, genitals, or perineum, or on the feet in those who go barefooted.

A. Powell * strenuously disputes the existence of this initial stage, and quotes Prout, Nicholls, Rochas, and Paulet as all agreeing that the initial lesion is exactly like the subsequent lesions, or it may be absent altogether. Some authors lay stress on a single yaw preceding for some time the general outbreak, the "mother yaw" of the natives, who think the rest spring from it. It is said that it often persists throughout the course of the disease, and may even be the last to heal. Nicholls and Daniels, while admitting the existence of a "mother yaw" in some cases, state that it is exceptional, and has no practical importance, as it is like all the rest, though some say it has an indurated base which the later ones have not.

The secondary stage usually comes on about a fortnight after the sore has healed, *i. e.*, about a month from the onset. There is intermittent fever, usually of a quotidian type, with headache, backache, and shooting pains in the limbs and intercostal spaces like those of dengue, and with nocturnal exacerbations. The lymphatic glands generally are enlarged, those near the site of inoculation especially. Albuminuria, hematuria, and epistaxis may be present. In adults and some children the general symptoms may be slight. The eruption, which appears with the general symptoms in a typical case, consists of minute red spots like lichen tropicus. It appears first on the face, and develops from above downwards, so that the whole body is covered at the end of three days, but the trunk is least affected as a rule. Many of the spots enlarge to distinct conical papules, but the greater portion fade after the third day. By the seventh day the apex of the papule is of a pale yellow color, which Rat considers to be inspissated sebum, and a black skin has the appearance of being dotted over with yellow wax. The papules then develop into nodules of a cylindrical shape, with a dome-shaped thick yellow crust,† the whole, in a typical fully developed lesion, being one-fourth inch across and one-eighth inch high. Underneath the crust is a mass of granulation tissue,

* "Yaws in India," *Brit. Jour. Derm.*, vol. viii. (1896), p. 457.

† This yellow cap may adhere closely or be detachable from the presence of pus beneath it (Daniels).

covered with a creamy acid secretion, and the whole looks like small pieces of pickled cauliflower an inch apart, often with specks of red, due to dried blood from the subjacent papillæ. It is only with the crust off that there is any resemblance to the raspberry, and as anemia advances the color fades to yellow, and even white. This full development takes about a fortnight. During the next four weeks, it then shrinks down until the scab is on the skin, but brown and dried up, soon falling off and leaving a pale macula, which in dark races gets darker than the normal, but in pale races remains paler than the natural skin, and in either case is scarcely ever obliterated. Intense itching is almost always present, and there is a sour, musty odor, which becomes offensive in severe cases.* More or less intense anemia is also a constant symptom.

Such is the course of the disease in a healthy infant or child in which the disease runs an acute course, and Rat says seldom recurs, whereas other authors say relapses are very common; but in adults it has a tendency to become chronic, and produce the later lesions of the tertiary stage. In unhealthy subjects the nodules may coalesce into widespreading superficial ulcers, which interfere with the usual course of the disease.

Variations.—The nodules may vary in number and size from a millet seed to a walnut when single, or they may coalesce into a large patch of granulation tissue under a single crust, or they may form rings round the eyes, nose, mouth, or anus, or inclose sound skin (**ringworm yaws**). In the last position the crusts get rubbed off, and then the lesions resemble the mucous patches of syphilis. In unhealthy subjects, instead of the nodules being absorbed and healed in six weeks, they will go on for nine months or more if untreated, or they may break down into ulcers, which, however, readily heal under treatment. On the palms and soles the most frequent position in the later stage, the horny covering prevents the protrusion of the nodules, and they are then painful on pressure, *e. g.*, in walking, hence the "crablike gait," and a perforating ulcer on the ball of the great toe may ensue. Lesions may also be produced on the nasal mucous membrane, mouth, or glans penis, or auditory meatus, and produce great pain, but as a rule the painlessness of yaws is a characteristic feature when fully developed, but

*Powell (*loc. cit.*) says that in coolies who wash daily fetor is absent.

Charlouis says they are painful when they first appear, and that it is only the later batches which are painless.

Sometimes the nodules abort, leaving a persistent scaliness, with loss of pigment, or follicular pustules may form below the elbow or knee, and persist after the usual nodules have gone. There is no alopecia or other damage to the hair, except on the site of the lesions, where the follicles are destroyed. Onychitis sometimes occurs, with shriveling and irregularity. Muscular contractures, probably from infiltration, and nodes may appear on the cranium, clavicle, ribs, ulna, tibia, and metatarsal bones during the secondary period. The tertiary period occurs in those who have a special predisposition, constitutional debility, or who have bad hygienic surroundings or have had injudicious treatment. The lesions are no longer limited to the skin, but involve the deep tissues. Then the superficial ulcers get deep and lose their characteristic crusts, and heal with distorting cicatrices, the neck, front of the elbow, wrists, back of the hand, and instep being favorable positions for them. The duration of the disease averages two years, but varies between three months and four years.

A serpiginous ulceration may occur several years after the secondary period. Successive rings of nodules, which ulcerate and heal, may form round the ankle and leave narrow cicatricial concentric rings. Granulation nodules, as in the secondary period, may also be formed, and nodules like syphilitic gummata often break down into ulcers, especially about the ankle or instep, or they may remain unchanged for months, and eventually be absorbed, but are prone to recur unless completely destroyed. Other late manifestations are: Destructive ulceration of the nares, pharynx, and soft palate, which are chiefly seen at puberty after yaws in earlier life; diffuse chronic periostitis, as well as the nodular form of the secondary period, may occur with great pain; dactylitis and arthritis may be seen; permanent contractures also are seen at this period; anemia and marked cachexia are present in severe cases, and death may occur from exhaustion, pyemia, septicemia, or intercurrent inflammations, but it is seldom fatal if properly treated, and it is often remarkable that the lesions may be severe, with very little disturbance of the general health.

There is still a good deal of dispute as to the tertiary lesions.

Some think they exist but are rare, many do not mention them, and many deny their existence as a consequence of yaws, but ascribe them to concurrent tertiary syphilis. Powell never saw them among coolies.

Etiology.—A tropical climate is an essential factor for the disease, which occurs in both sexes, at any age, but is most common in children from two to twelve years old, while it is rare under twelve months. Among predisposing influences race comes first, negroes and East Indians being especially liable, but it is said that mulattoes, creoles, and other hybrids are less often attacked, and it is rare in whites. Probably no race is exempt, but the difference in habits determines a greater or less frequency of exposure to inoculation. It is never congenital, and the modern tendency is towards disbelief in its being hereditary.

It is, however, undoubtedly contagious, inoculable through an abrasion or sore, and even, it is said, through sound skin, flies being often the carriers of contagion, though some experiments on parangi are adverse to its being inoculable. Charlouis has shown that failure only occurs when the yaws lesion is in the declining stage. The disease is protective, as a rule, but Nicholls and others have met with instances of second, and even third attacks. Much has been attributed to the bad hygienic conditions in which negroes live, but these have only an indirect influence, aggravating the form of the disease and facilitating its propagation, but not producing it, as it does not occur under the same conditions everywhere, but is strictly endemic. It is noteworthy that while yaws, or "coko," is common in Fiji, syphilis is unknown among natives (Daniels); Koch observed the same thing in German New Guinea.

Pathology.—It is undoubtedly due to a specific, contagious virus, modified by race and climate, but whether *sui generis* or that of syphilis is a moot point still, Hutchinson and some others holding that it is so, but most who have observed it in its native haunts consider it an independent disease, though it has many analogies to syphilis; and as I read the evidence it is clearly in favor of yaws being a separate disease.* Recently

* Some powerful arguments against yaws being frambesiform syphilis are brought forward by A. Powell, *loc. cit.*, and Daniels, *Brit. Jour. Derm.*, vol. viii. (1896), p. 421. Beaven Rake, vol. iv. (1892), p. 376, found

(1894) Nicholls and Watts claim to have found the yaws microbe in the form of a micrococcus which invades the system through the lymphatics. It was always present in the granulomata and the lymphatic system, but not in the blood. The disease has not yet been reproduced from inoculation of a cultivation in the human subject, and animals are probably immune. Should these observations be confirmed and extended, the question will be settled. Daniels, Haffkine, and Powell have also found micrococci with whitish cultivation. Breda found bacilli in the tissue itself by soaking the section for twenty-four hours in alum carmine, then for half an hour in water, and then staining by Weigert's fibrin stain; a high power is required to see them.

Anatomy.—The anatomy has been investigated by Charlouis, Pontoppidan,* Paulet, Ferrier, Rat,† and others. Charlouis found that the process was at first that of a dermatitis, confirmed to the papillary layer, gradually extending into the corium, and involving the appendages of the skin. A considerable portion of the epidermis was thrown off, the part of the rete still left being infiltrated with leukocytes. The exciting cause of the inflammation could not be discovered. Pontoppidan thought the process began in the rete, and found no changes deeper than the papillary layer.

Unna says: The yaw is more simply constructed than a syphilid. It is a plasmoma of the cutis complicated with epithelial growths and hyperkeratosis. The strawberry appearance after removal of the crust is the result of the great increase of the papillary body, and its thin covering with the supra-papillary prickle layer. The cellular infiltration consists of plasma cells. Macleod's investigations agree with Jeanselme's. They were made on eight cases from Ceylon, and the following *résumé* is in his own words.

An examination of a large number of sections of the different lesions of yaws corroborated Nicholls' observation that the skin manifestations, namely, squames, papules, tubercles, etc., were stages in the evolution of a common histological process.

A. Changes in the Corium.—(*a*) Vessels: dilatation and tortuosity in the papillary and subpapillary layers; no thickening of the vessel walls or endothelial proliferation; vessels persist in the granuloma. (*b*) Cellular infiltration: 1. Plasma cell infiltration at first most marked in the neighborhood of the vessels, follicles, and glands, rapidly becoming diffused;

none of the visceral changes of syphilis in four autopsies on yaws patients, but the best differentiation is Sir William Kynsey's *résumé*, *Brit. Med. Jour.*, September 21, 1901, p. 802. On the other side *vide* Hutchinson, *loc. cit.*, New Syd. Soc.

* *Viertelj. Derm. u. Syph.*, vol. ix. (1882), p. 201.

† Macleod, *Brit. Med. Jour.*, September 21, 1901, p. 797.

no definite arrangement in rows; no large multinuclear cells (chorio-plaques), or true giant cells. 2. Mast cells, connective tissue cells, and small mononuclear cells; no tendency to organization detected. 3. Marked extravasation of polynuclear leukocytes. (*c*) Fibrous stroma: 1. Collagen attenuated where the granuloma is densest; no definite degenerative changes. 2. Elastin similarly affected. (*d*) Hair follicles, sebaceous glands, and coil glands seemed healthy.

B. Changes in the Epidermis.—(*a*) Marked proliferation and down-growth of the interpapillary processes so great in the older lesions as to resemble condyloma acuminatum. (*b*) Basal layer uninterrupted. (*c*) Edema affecting prickle cells and interepithelial spaces. (*d*) Disappearance of pigment in the affected area. (*e*) Transitional layers imperfect. (*f*) Cornification: marked hyperkeratosis and parakeratosis with deposition of leukocytes and débris between the horny lamellæ.

Bacteriology.—A specific microbe was not definitely detected, though cocci, micro-bacilli, and sarcinæ were found in the horny crusts.

Differential Histological Diagnosis.

Yaws belongs to the group of the "Infective Granulomata." It is distinguished from: 1. Actinomycosis and rhinoscleroma by the absence of their specific micro-organisms. 2. From the lepromata by the absence of Hansen's bacillus. 3. From mycosis fungoides by the absence of "fragmentation" of the infiltrating cells, and of degenerative changes with the formation of products of degeneration in the collagen and elastin; by the presence of the peculiar epidermal changes of yaws. 4. From tuberculosis, apart from the tubercle bacillus, by the absence of the characteristic architecture with its giant cells, daughter plasma cells, more marked disintegration of the fibrous stroma, and complete disappearance of the blood-vessels. 5. From syphilis, by the following details which, considered collectively, strongly suggest that yaws and syphilis are different histological entities. (*a*) Cellular infiltration: plasma cells not so definitely arranged in rows or clustered round the blood-vessels as in syphilis; no large multinuclear cells (chorio-plaques), or true giant cells, or intracellular hyalin degeneration noted in yaws. (*b*) Fibrous stroma: rarefaction of the collagen more marked than in syphilis, but no organization or colloidal degeneration (such as occurs in syphilitic gummata) found. (*c*) Blood-vessels: no distinct proliferative changes in the vessel walls or endothelium, as frequently occurs in syphilis. (*d*) Epidermis: marked proliferation and downgrowth of the epithelium, with a great thickening of the horny layer (due to hyperkeratosis or parakeratosis) are characteristic features of yaws, while they are unusual in syphilis.

Diagnosis.—The most characteristic features are the initial papule, which enlarges to fungating nodules with an acid secretion, and covered by a yellow crust. When this is removed it leaves bare the raspberry-like tumor, which remains stationary for weeks or months with yellowish discharge, not painful on

pressure, and tending to heal spontaneously without scarring, unless irritated into ulceration, or in cachectic conditions; the disease, as a whole, tending to spontaneous recovery, except in bad hygienic conditions. Loos and others have endeavored to separate the *parangi* of Ceylon from West Indian yaws, but the supposed distinctions break down on close examination, and Sir William Kynsey has no doubt of their identity. The button scurvy of Ireland is also admitted to be a form of yaws. The differences from syphilis, according to Numa Rat, are principally the fungous eruption with acid secretion and the absence of enlarged glands (these, however, are mentioned by some authors). Other differences are, no induration of the initial lesion, which is never phagedenic, and usually extra-genital. The characteristic eruption is not symmetrical or polymorphous, but has constant characters unmodified by age, sex, or race; it is rarely pustular, and does not leave scars unless irritated or injured. The lesions of the mucous membranes are never present until after the secondary stage, generally years after. No alopecia or other hair change, no eye changes such as iritis, no ulcers of tongue, anus, or rectum. Mercury is injurious in the primary and early part of the secondary stage, and iodids are much less efficacious than in syphilis in the tertiary stage. In yaws the following characteristic symptoms of hereditary syphilis are absent: Notched teeth, rhagades round the mouth, mucous patches, enlarged spleen, bullous syphilids of palms and soles, osteophytes and epiphyseal enlargements, eye and ear lesions. Even these are not the only differences; one very notable feature being that, when yaws is not injudiciously treated the lesions are limited to the skin, and less frequently to the mucous membranes.

Two cases have been observed by Powell and two by Charlouis, in which persons with yaws have contracted syphilis, with the usual symptoms co-existing with the yaws lesions, which disproves Daniels' statement that co-existent syphilis always precedes yaws. Yaws when inoculated always breeds true. It is probable that in their descriptions some authors have mixed the symptoms of syphilis and yaws.

Treatment.—Improved hygenic conditions are always most important. The most careful cleanliness and nutritious but unstimulating diet, tonics, diaphoretics, and, locally, disinfectant

applications, carbolic or boric acid lotions, and diluted nitrate of mercury ointment, are recommended by Imray, who also suggests that at first, sulphur and acid tartrate of potash should be given for a week to bring the eruption out thoroughly, as when it fails to develop well in the early stage the patient becomes cachectic, and septic symptoms may ensue.

Powell has observed that an attack of malaria or other disease attended with fever has very often a curative effect on the fully developed lesions, but stimulates those in the papular stage, and in 1784 Naubhard noted that smallpox cured yaws.

Rat lays great stress upon healing a previously existing sore, if it is the site of inoculation, as it prevents the development of the eruption. He also recommends iron, preferably the tartrate, and cod-liver oil, and for the febrile condition, quinine or salicylate of soda. He is a strong advocate for diaphoretic measures after the febrile symptoms have subsided, ammonium carbonate being preferred on account of its being alkaline as well as stimulant and diaphoretic; and he lays great stress on promoting alkalinity of the secretions. For the characteristic nodules he recommends sulphur baths, natural or artificial, and calomel fumigations. After the nodules have dried up iodid of potassium and tonics should be given for another six weeks. If the lesions are obstinate, Donovan's solution in doses of ℥v to ℥x is recommended. In the tertiary stage Rat still gives mercury and iodid of potassium combined, or the calomel fumigations and full doses (gr. 15) of iodid. He believes that, as in syphilis, mercury alone cures, iodids only alleviate. All are, however, agreed that it should not be given in the early stage, and that its administration requires care and watchfulness, or it will do more harm than good.

Charlouis obtained the best results by applying ung. hydrarg. to the nodules, and giving iodid internally, but iodid alone only relieved the bone pains, but for these iodoform pills five grains three times a day gave immediate relief.

The various sores are best treated by washing with weak perchlorid of mercury lotion, and the application of iodoform, either dry or as an ointment. Black wash is also often useful. In Breda's Brazilian cases of long standing, nothing except erasion had any effect.

VERRUGA PERUANA.*

Deriv.—Verruga, Spanish for a wart.

Synonyms.—Peruvian wart; Carrion's disease;† Oroya fever.

This disease is mentioned as early as 1543 by Zárate, in his "History of Peru," but Tshudi in 1845 gave the first good medical account of it. It is a narrowly endemic disease, with occasional epidemic outbreaks, being confined to the narrow gorges of the Western Andes in Peru;‡ and it is not in any way connected with yaws, with which it is usually confounded, the single fact that whites suffer more frequently and severely than negroes or Indians being an important distinction, enough to separate the two diseases. Verruga is certainly inoculable,§ and it is highly dangerous to stay in the diseased centers even for a short time, but this is possibly analogous to the effect of the malarious parasite. It appears to be an acute specific affection, which affects animals—the horse, ass, mule, and dog—as well as man.

Symptoms.—The outbreak of the eruption is preceded for some weeks or even months by severe febrile symptoms, of which a cramplike contraction of the gullet was said by Dounon to be the most characteristic, but Castillo and others say that it only occurs when there are pharyngeal verrugas.

There are also cramps in other muscles and severe pains with great prostration, and sometimes death before the eruption has time to develop, constituting Oroya fever.‖

* *Literature.*—Hirsch, *loc. cit.*, vol. ii. p. 113. Plate XLI., Frambesia, Sydenham Society's Atlas, represents this disease—an account of the case is given p. 145 of the catalogue. Beaumanoir, "De la verruga," *Archives de Méd. Navale Coloniale*, January, 1891, p. 1. A good abstract in *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 818, also vol. x. (1898), p. 59. Abs. of Chastang's Memoir, *loc. cit.*, 1897, p. 417, *Brit. Jour. Derm.*, vol. x. (1899), p. 59.

† "Odriozola"; monograph with plates, published in Paris, 1898. Morrow's System, *Gen.-Ur. Dis., Derm. and Syph.*, vol. iii. part ii. p. 707, gives a very extensive bibliography to 1891.

‡ In *Lancet*, November 10, 1883, Dr. de Haviland Hall describes a peculiar disease met with at Zaruma in Ecuador by Mr. Aldridge, which corresponds in many respects with verruga.

§ In the *Lancet*, 1886, is the case of Carrion, a Peruvian medical student who experimentally inoculated himself from a verruga lesion, was taken ill on the twenty-second day, and died on the thirty-eighth, before any eruption appeared, with the symptoms of "Oroya fever."

‖ The name arose from the terrible mortality which was produced in

There is great destruction of red corpuscles, from half to one-third or even less.

Ordinarily these symptoms remit or vanish with the appearance of the eruption, which begins on the face and limbs and spreads over the rest of the body; or the eruption may be delayed until after the spontaneous subsidence of the general symptoms; or again the latter may be reproduced after the eruption is out. The lesions are lentil- to pea-sized, raised pink spots, which develop into cylindrical, conical, or hemispherical tumors, from a raspberry to a pigeon's egg, or even an orange in size and in shape, cylindrical, conical, hemispherical, or fungiform. The consistence is soft or elastic, according to the rate of development, and *the surface is tender*, thus contrasting with the painless lesions of yaws. They are highly vascular and their surface is smooth and shining. Sometimes they develop from vesicles of various size, or from pustules instead of from pink spots. When the tumor is fully formed the epidermis thins over it, cracks, and bleeding is easily induced, very copious, difficult to control, and producing profound anemia. The tumors may either dry and shrivel up and peel off, or disintegrate into ulcers. The number of the excrescences ranges from one to several hundreds, of all sizes, most abundant on the extremities, face, scalp, and neck, sometimes on the palms and soles, but rarely on the trunk. They may be subcutaneous, choosing then the elbows and knees, or the legs and ankles. They may be absorbed or break down into ulcers, which fungate and have an offensive discharge. Any or all of the mucous membranes may also be involved, and hemorrhages may occur both from the mouth and anus. The liver, spleen, kidneys, or brain may be involved also. The disease generally lasts two or three months, sometimes more,* but it may be fatal earlier from hemorrhage, or when death occurs before the eruption appears. The duration may be only a few days or weeks.

In cases which survive there may be left profound anemia,

the laborers constructing the Callao to Oroya railway, 1870–74. Oroya itself is not a place where the disease is endemic. The symptoms were those of malignant malaria with a mortality of seventy per cent., and there was no eruption, except in some of the milder cases which survived.

* There have been rare instances of a very mild outbreak of a few lesions long after the patient has left the district. In one case two lesions appeared two years after.

dropsy, or nervous complications. The mortality is from 6 to 10 per cent. in the natives, 12 to 16 among whites, or in epidemics 40 per cent., while in Oroya fever it may reach 90 per cent. The lesions consist of highly vascular granulation tissue, cavernous tumors, which take their origin from the superficial or deeper layers of the corium, and if they disappear, do so by absorption, ulceration, crusting, or suppuration; the last is rare. Yzquierdo has found a bacillus or streptococcus larger than that of tubercle in the tissue interstices, as well as in the vessels which may be occluded by them; whether it is really the materies morbi remains to be proved.

The most important point of the treatment is the immediate removal of the patient from the endemic area; large doses of quinine have not been of much service, but large doses of perchlorid of iron were successful in the treatment of the analogous cases of Mr. Aldridge of Zaruma. As in yaws, it is considered advisable to encourage the development of the eruption.

It is significant that the worst forms have occurred where large masses of earth have been disturbed; that it has disappeared where the soil has been drained; and that it has occurred chiefly among those who have bathed in or drank of the waters of the district. It would be interesting to investigate whether mosquitoes play a part in its propagation.

FURUNCULUS ORIENTALIS.*

Synonyms.—Oriental boil; Aleppo boil; Delhi boil; Biskra or Biscara button; Gafsa button; Kandahar sore; Pendjeh sore; Annamite ulcer; Gaboon ulcer, etc.; *Fr.*, Clou de Biskra; *Ger.*, Orientbeule.

Definition.—A local disease, occurring chiefly on the face and other uncovered parts, endemic in limited districts in hot climates, characterized by the formation of a papule, a nodule, a scab, and under the last, a sharply-punched-out ulcer.

This disease is common in certain districts of tropical and subtropical climates from 23° to 45° N., and from 2° W. to

* *Literature.*—St. Louis Atlas, Plate XXXII., Model in Coll. Surg. Museum, No. 317, Dermatological Series. "Delhi and Oriental Sore," by Dr. J. Murray, *Trans. Epidem. Soc.*, vol. ii. (1883), p. 90—a good

80° E. The local names indicate most of the localities, to which must be added the southern and eastern littoral of the Mediterranean, Crete, Cyprus, the Crimea, and Persia, where it is very prevalent.

The Puru* of the Malay peninsula is the same disease, and it is endemic in Bahia.† Peacocke in 1845 and Russell in 1756 first described the disease as they saw it in Aleppo. Natal sore is probably "the Veld sore."

Symptoms.—It is an entirely local disease, unattended by constitutional disturbance, but it has a period of quiescence after inoculation of from three days to several months. It occurs chiefly in uncovered parts, especially the face, any part of which may be attacked, but the cheeks, angles of the mouth, alæ nasi, the ears, and the orbits are the favorite seats. The scalp is never attacked; it may occasionally be seen on the extremities, especially the back of the hand or foot, but is quite exceptional on the trunk or pubes. Commonly, there is one so-called boil, but there may be several, and as many as ninety have been counted scattered over the face and body. It begins as a red papule, like an irritated mosquito-bite, gradually enlarges to the size of a pea or bean, of a dull red color, and the surface is undisturbed, smooth, and shining for weeks or months, but with a lens the red surface can be seen to be studded with deep-seated, yellowish-white points like milium.

Then, from a small central aperture, thin, clear serum begins to ooze, and dries into a closely adherent brown crust, which gradually enlarges in thickness and area. Beneath this scab the nodule gradually disintegrates, until a round ulcer from three-quarters to two inches in diameter is formed, with a red areola beyond. The edges are sharp and irregular, the ulceration may penetrate into the subcutaneous tissues, the floor is uneven,

account, with photographs. Hirsch, *loc. cit.*, vol. iii. p. 668, with bibliography. Woolbert of Meshed sent me an interesting series of drawings made on the spot, together many clinical observations which I have incorporated in the text.

* "Puru, a contagious form of Lupus occurring in Malay," by W. C. Brown, Penang, *Brit. Jour. Derm.*, vol. v. (June, 1893), p. 161, with photograph.

† De Souza of Bahia, Portuguese Thesis, 1895; abs. *Brit. Jour. Derm.*, vol ix. (1897), p. 129. Tuliano in 1890 also described it as a disease of Bahia.

fungating in one part and disintegrating in another, secreting a thin, offensive pus, which, if allowed to dry, forms thick, adherent crusts. The primary ulcer is small, and may remain so, but ulcers several square inches in area may be formed by the coalescence of secondary ulcers round it. After some weeks or months the fungoid granulations give place to more healthy ones, which gradually fill up the excavation more or less completely, and the sore ultimately cicatrizes, the scar being more or less puckered towards the center, and pigmented of a uniform brown color; the whole process lasting three to twelve months, or even two years. Some cases last much longer than this, by the sore breaking down repeatedly after cicatrization, healing in winter and ulcerating in the summer. From reinfection fresh regions of the body may be invaded several years after the original sore has healed. Uncomplicated cases heal and leave only scars, which may disfigure the face and cripple the limbs by their contraction. If secondary complications occur, such as lymphangitis, erysipelas, or glandular enlargements, or the ulceration is very extensive with cachexia, from leprosy or other cause, there may then be danger to life. Small nodules beyond the ulcer sometimes form along the course of the lymphatic vessels, but the glands as a rule are not then enlarged.

Etiology.—No sex, race, age, or nationality gives exemption when brought within its influence. At the same time it is most common in children after the second year, rarely appearing before that, and in Aleppo few native children reach the age of seven without having had it; it may, on the other hand, affect people of forty or fifty, or even older. As a rule, strangers do not get it until they have been some time in the district, but occasionally only a few days' sojourn is sufficient, and in some people, like leprosy, it only appears after they have left the district. Its strict limitation indicates that climate has some influence, but it is usually considered to be independent of the nature of the soil. Besnier, however, disputes this, and Tilbury Fox considered that it was of malarious origin. It is seen chiefly in the latter part of the summer and in autumn, *e. g.*, in September, October, and November in subtropical climates, and in the first part of the cold season in the tropics. Numerous theories have been put forward to explain how it is excited, and a considerable body of evidence favors the idea that it is the water of the dis-

trict which contains the infecting parasite; and the members of the Government Commission to investigate the Delhi sore were of the opinion that it gained access to the body, not by drinking the infected water, but through some abrasion or scratch while washing or bathing in it. This Commission, of which Dr. J. Murray was president, and since that Depéret and Boinet also, have definitely proved that it is inoculable both in men and animals, and flies and other winged insects are plausibly considered by Laveran to be frequent carriers of the infection. There is no reason to believe it to be hereditary.

Pathology.—The balance of evidence is in favor of its being an infective and destructive inflammation, set up by a vegetable organism, but, in spite of numerous investigations, the exact organism has not yet been demonstrated. Smith's, Fleming's, and Carter's observations were clearly erroneous. Cunningham's monadines (refractile bodies larger than lymph corpuscles), according to the more recent investigators,* Riehl and Paltauf, are the same as the hyaline globules which they have described, and not, therefore, parasites at all.

Depéret, Boinet, Duclaux, Chantemesse, and Poncet de Cluny, however, have found diplococci, but not the same, both from the boil itself, and from blood near it, and inoculation with culture fluid failed to produce the disease; for though suppuration and even death in animals was produced, the symptoms were very different from Oriental boil. Paltauf's inoculation experiments were also negative. Leloir † obtained an organism similar to those of Duclaux and Heydenreich, and considers it in all probability the pathogenic agent; it consists of cocci in twos or conglomerations. Auché and Le Dantec ‡ found streptococci which produced on the rabbit something like the original sore. De Souza's observations support those of Duclaux. On the other hand, Geber,§ who investigated the

* "Zur Anatomie und Ætiologie der Orientbeule," *Viertelj. f. Derm. u. Syph.*, vol. xiii. (1886), p. 805, gives a good summary of previous investigation on these points.

† Leloir et Vidal. 1re livraison, Plate VI., 2me liv., p. 87; also Loustalot "Le bouton de Biskra," "Thèse de Lille," 1888, contains Leloir's observations.

‡ Auché and Le Dantec, Note on "Biskra Button," *Archives Clin. de Bordeaux*, October, 1894, Abs. *Brit. Jour. Derm.*, vol. vii. (1895), p. 98.

§ *Archiv f. Derm. u. Syph.*, 1874, Heft iv.

matter at Aleppo, believes that there is no specific disease at all, but that it is a medley of syphilitic, lupus, strumous, and other ulcers, all classed as the one disease. Although, doubtless, such errors are often made, there is no doubt that there is an endemic ulcer *sui generis*.

Anatomy.—Unna* gives a summary of the anatomical investigations, and concludes that the process is a chronic sero-fibrinous inflammation of the whole cutis, which leads in the center to necrosis, softening, and consequent ulceration, comparable to tertiary syphilitic ulceration, and considers that the lesion stands midway between an ulcer and a new growth. In De Souza's thesis observations there was hypertrophy of all the layers of the epidermis, but chiefly of the rete, with downgrowths and epithelial nests like those of epithelioma. There was cell infiltration, either as single or grouped islets or diffusely infiltrating the corium or even below, and it was in these infiltrations that the epithelial nests were found.

Diagnosis.—In the district where it is known to be endemic there would be no difficulty. The isolated papule developing into a nodule, and this exuding, crusting, and then disintegrating into an ulcer under the crust, and its situation on the face or other exposed part, constitute a distinctive set of symptoms; but as so experienced an observer as Murray considers this affection identical with yaws, it may be as well to compare the two affections, which doubtless have some points in common, but have many important differences.

Yaws is preceded by febrile symptoms; Oriental boil by none. In yaws the lesions are always multiple and often in crops; the boil is single, as a rule, and if more than one, they are rarely numerous; while both attack the face, yaws prefers the palms and soles; the boil, the back of the hands and feet. The lesions of both are papules succeeded by nodules, but in yaws the epidermis splits off in a few days, and the whole eruption is developed in from two to four weeks, but the nodules of the boil remain unchanged for weeks or months. When the crust of the boil is removed an ulcer is exposed; when that of yaws is removed a moist tumor is brought into view, and yaws never ulcerates, except when irritated, and in cachectic subjects. The yaws tumors dry up and fall off, leaving no scar; the boil neces-

* Unna's Histopathology, p. 476, with pathological references.

sarily leaves a deep scar. Finally, yaws, while very prevalent among the colored races, seldom attacks Europeans, while the boil impartially attacks all within its sphere of influence.

Prognosis.—This is decidedly good for recovery, a fatal issue being rare, and only in very cachectic individuals; but disfiguring and disabling cicatrices may be left, unless the case comes early under treatment. The patient is not, however, protected either from recurrences or fresh inoculation.

Treatment.—In the early or "mosquito-bite stage," Murray recommends the actual cautery to completely destroy it; when available, Paquelin's or the galvanic cautery would be the most convenient means for the purpose, but it is seldom seen in this stage. I should be inclined to try three per cent. carbolic acid injections in the same way as for carbuncle, round the boil area before it has broken down. Woolbert, practicing in Meshed, Persia, where the disease is very common, finds that, when the whole boil area has ulcerated, scraping away the granulations and applying nitric acid produces rapid healing. Other caustics, such as caustic potash, or the fuming acid nitrate of mercury, solid nitrate of silver, or pure carbolic acid, are also useful. After destruction of the diseased tissue the ordinary treatment for simple ulcer is sufficient, *e. g.*, carbolized or boric lint, or corrosive sublimate lotion, under oiled silk, or iodoform dressings may be applied. The prophylactic treatment is to avoid the infected water, both for washing and drinking, unless it has been boiled. Dr. G. Ranking,* like Fox and Besnier, regards the ulcer as of malarial origin, and says that if large doses of arsenic or quinine are given, the ulcer heals readily with the simplest local treatment. Frog-skin grafts greatly expedited cicatrization in large ulcers. Gaucher and Bernard found that in "Annamite ulcers" they healed readily in a month with simply ten minutes' spraying every day with boiled water and compresses of the same constantly applied. No internal medication was employed, and they regard antiseptics as positively injurious. Petersen was successful in healing an "Aleppo sore" with the Finsen light with the minimum of scar, but it required numerous exposures; probably the Röntgen rays would act more quickly and equally efficaciously, and at all events would be more easily applied.

* *Lancet*, August 27, 1887, p. 413.

The **Madagascar ulcer,*** according to Fradel and Legrain, is a special disease, attacking the extremities with a long duration, leaving hard white parchment cicatrix, with a tendency to recur, and it may implicate the deeper tissues, including the bones. It is thus differentiated from Biskra button, and appears to belong to phagedena tropica.

Veld Sore. (*Synonym.*—Natal Sore?) The South African war has made this sore only too familiar to our soldiers and surgeons, and Ogston, Harland, Harman, and others have written upon it. It attacked the cavalry twice as often as the infantry. The sores were usually multiple, occurred mostly on the hands and forearms, chiefly on the backs, and also on the feet and legs, but they were infrequent on the face, and on the less exposed parts of the body. A breach of surface was nearly always the point of entry, and Harland suggests that it is conveyed by the large brown horseflies, which were very abundant. It begins as an itching pin's-head papule, vesicle, or pustule, which rapidly increases in size, with at first clear yellow serous fluid, which is soon turbid, easily ruptures, and becomes a painful dirty-looking sore, usually not larger than a shilling, but varying from a threepenny-piece to a crown, and covered with a dirty scab exuding pus and serum; some inflammation of the lymphatics and glands are often present. Harland says that sometimes there may be a huge flat pustule covering the whole of the back of the hand and up to the forearm. Ogston says that suppuration is not a characteristic feature, the border being vesicular with a red areola, which on the arms and legs look like "lazy blisters," which slowly spread but will not heal, and it is essentially epidermic; and Harman describes it as a vesicle or blister in the stratum lucidum. Cultures yielded a diplococcus growing freely in ordinary media, and in some respects resembling staphylococcus aureus. In aërobic cultures it grew as a diplococcus. There seems strong reason for believing that it is a semi-tropical variant of impetigo contagiosa, or its crusted form "ecthyma."

The cure is easily effected, Harland says, by the application of boric or carbolic acid fomentations, and subsequent dress-

* *Annales de Derm.*, vol. vii. (1896), p. 1088, and (1897), p. 781.

ing with boric ointment. No doubt the usual treatment for the destruction of pus cocci would be effectual.

Harman says that the veld sore was found in the high barren tableland, while the Natal sore was found in the lower parts of Natal, where vegetable and animal life were abundant, so perhaps they are different affections. The veld sore yielded staphylococcus pyogenes aureus both to film and culture preparations.

The **Barkoo,** or **Barcoo Rot,** of Queensland appears to be a similar affection to the "veld sore."

GRANULOMA INGUINALE TROPICUM.*

Synonyms.—Groin ulceration; Ulcerating granuloma of the pudenda (Galloway).

Definition.—A tropical disease characterized by chronic ulceration of the groin and neighborhood, with papillary overgrowth.

We owe the first clear account of this affection to Conyers and Daniels of British Guiana in 1896. It appears to be fairly common in British Guiana and the West Indies, but it has also been observed in India by J. Maitland and in Fiji by Daniels; probably it occurs in most tropical climates, but is confused with syphilis and yaws.

A case in a negro came under my care in 1888, and subsequently under that of Pringle; but while we recognized that it was a special form of disease, there was no published account to show that it was well known in the tropics. He had left the West Indies five years when the disease began, six months before I saw him, as a flat sore on the top of the penis, behind the corona, attributed to impure intercourse nine days previously. He told Pringle that it began as a pea-sized boil in the right groin, which was scratched into a sore, and spread down the side of the scrotum and up along the groin. Probably that

* *Literature.*—Conyers and Daniels, "The Lupoid form of the so-called 'Groin ulceration' of British Guiana," *British Guiana Medical Annual*, 1896. (Georgetown, Demarara: Baldwin & Co.) "Ulcerating Granuloma of the Pudenda," James Galloway, *Brit. Jour. Derm.*, vol. ix. (1897), p. 133; a good abstract of the above paper and original observations on histology, illustrated. Also the clinical history of the case which came first under me and then under Pringle, in 1888 and 1889.

was true for the groin lesion, but the penis was the primary point of infection. Conyers and Daniels say that papules are the first lesion, and that pink, smooth, shining nodules develop from them half an inch or more in diameter. These break down spontaneously, or from abrasion, and superficial, spreading ulceration is produced. At first smooth, it soon develops an easily bleeding papillary overgrowth, often with copious serous discharge, very offensive and *sui generis*. The nodule may heal with the formation of a good deal of firm fibrous tissue, but it often breaks down again, and the disease extends by the aggregation of fresh nodules which form at the margin, and are especially large when seated at the hair or sebaceous follicles. The heat and moisture of the folds favor extension, and the discharges of the sores may inoculate the skin traversed by them.

In males the disease usually starts in the groin or pubes, and extends in a line about half to three-quarters of an inch wide, the whole length of the groin, and sometimes on the perineum, and as far as, and even round, the anus; it may also extend over the pubes, where it is often very extensive, and join the lesion of the opposite groin. The penis may also be primarily or secondarily involved, and in my case there was a collar of ulceration at the neck of the glans.

In females the labia or vagina are the usual starting-point, and in them extension along the perineum to the anus is especially likely to occur, involving the mucous membranes sometimes to a considerable extent.

The aspect of a fully-developed linear lesion is that of superficial ulceration within a sulcus with a papillary, more or less crusted growth on each border, the whole situated on a raised indurated ridge. Where adjacent hot moist surfaces are in juxtaposition, the disease may be in plaques instead of ridges. Detached lesions also exist, and there may be cicatrization at some points, the scar being dense and irregularly pigmented, and if it is extensive, the blocking of the lymphatics may give rise to more or less elephantiasis. While, however, it is cicatrizing at one point it may be breaking down at another, and so all stages may sometimes be seen together. In this way the course is very variable, and the duration is from a few months to several years.

Etiology.—The disease attacks both sexes, but is more fre-

quent among females, at any time after puberty, and generally young adults, twenty-seven years being the average of Conyers and Daniels' cases. Negroes are said to be especially liable to it, but, as already said, Maitland has met with it in East Indians, and he is strongly of opinion that it is of venereal origin, but not syphilitic. Daniels has also observed it in Fiji among imported Melanesians, who, like negroes, are particularly liable to tuberculosis and keloid. The influence of race is borne out in the case of my negro patient, who contracted it in Paris so many years after he had left the West Indies. Nevertheless a closely analogous condition may occur even in England. A

Fig. 62.—Papillary growth in the groin identical with granuloma inguinale tropicum.

youth of eighteen came to University College Hospital on May 4, 1897, with a linear lesion in the groin five and a quarter inches long, and in width averaging three-quarters of an inch, but tapering to one-third of an inch at the upper end. Portions of the lesions were healed and of a purplish-red color, but the greater part was ulcerating with papillomatous surface. He stated that it began as a small pustule nine years previously, which broke down into an ulcer, and had gradually spread into its present condition, but it had altered very little for the last four years. There was no evidence of phthisis in himself or family, and he lived in the country under healthy conditions.

Histologically, Galloway confirmed its similarity to the tropical form of the disease, but the latter is contagious.

Pathology.—Galloway,* who examined some of Daniels' material, pronounces it to be structurally a granuloma, with much elongation of the papillæ and rete proliferation over them. No organism has been isolated, but to my mind it is strongly suggestive of pus cocci infection.

Treatment.—Erasion and subsequent swabbing with carbolic acid appears to be the quickest and most satisfactory method of treatment, and if thoroughly done there will be no recurrence.

PAPILLOMA OF THE SKIN.†

Synonym.—Acanthoma.

Corns, warts, horns, and some nevi, were all formerly considered by general pathologists as examples of "papilloma of the skin"; and various kinds of tumors, such as sarcoma, carcinoma, epithelioma, and fibroma, as well as morbid processes like syphilis, lupus, eczema, and sycosis, are liable to develop papillary growths.

Virchow, Auspitz, Unna, and others have pointed out that all the growth is really epithelial, and that there is only an appearance of growth of the papillæ; Auspitz and Unna, therefore, advocate the substitution of the term acanthoma ‡ (growth of the prickle cell layer). It is probable, however, that the old term will be retained for a long while, but it must be understood that it is here used as a clinical term for various papillary growths. While all acanthomata are not papillary, *c. g.*, molluscum contagiosum, they are probably all of microbic

* *Loc. cit.*, with plates.

† *Literature.*—Author's Atlas, Plate LXXV., shows a papillary epithelial growth on the face of a case of xerodermia pigmentosa. The epithelial structure of this growth is shown in Fig. 33. Hardaway, "Clinical Study of Papilloma Cutis," *Amer. Arch. of Derm.*, vol. vi. (1880), p. 387—a good general review of the whole subject. Morrow, "Tuberculosis Papillomatosa Cutis," *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vi. (1888), pp. 361 and 401, well illustrated, gives an account of very extensive primary growth, and discusses the question of papilloma. "Das entzündliche Haut-Papillom," Roser, *Arch. der Heilkunde*, 1866. Weil in *Viertelj. Derm. u. Syph., f.* 1874, p. 37, with colored plate.

‡ Unna's "Histopathology," p. 784.

origin, and most, if not all, of the secondary growths are due to pus cocci.

An attempt has, however, been made by Neumann, Duhring, and some other dermatologists to give the term papilloma a special meaning, on the strength of certain cases which have been reported as inflammatory skin papilloma by Weil and Roser, and under other names by various writers. It consists of a raised cauliflower excrescence, very like verruca acumina, already described, varying in size, with fissures and sinuses, which secrete a yellowish puriform and sometimes offensive fluid, occurring at any part of the body and at any time of life. I once saw a patch of this kind on the hip of a tubercular man of twenty-five, about one inch in diameter, projecting about one-fourth of an inch, with a scabbed covering, and hypertrophied, readily bleeding papillæ. There was no history of previous lesions, but Hardaway thinks such growths are always secondary to ulcers or other lesions, and calls them all symptomatic papillomata. Beigel's oft-quoted case of **papilloma area elevatum** in a child, æt. twelve months, suffering from convulsions,* was evidently a case of bromid rash, in which the appearance of the papilloma is not infrequently produced when the scab is removed from the larger lesions, and they are also sometimes followed by papillary hypertrophy. The term "neuropathic papilloma" is often applied to the band form of warty growths, which really belong to the same category as ichthyosis hystrix.

Instead of being in a single tumor there may be a patch of papillary growth. An old lady received a blow on a patch of eczema on the thumb; four months later there was a growth one and three-eighths by one inch in area, raised up a quarter of an inch, papillomatous in the center, with soft granulation tissue at the border, with the skin over it sound, but livid red, and looking like a lupus papillomatosus; it was gradually spreading. Loretin was first applied, and then salicylic acid gr. xv., unguentum zinci oleatis ℥j, under which it got quite well. The fungations which develop in the axillæ and groins in pemphigus vegetans are probably of the same nature, and can be removed by iodoform and similar applications.

* *Path. Trans.*, vol. xx. p. 414.

GRANULOMA PYOGENICUM.*

Synonym.—Botryomycosis hominis.

Definition.—A fungating tumor produced by pus cocci.

Veterinary surgeons first used the term botryomycosis for an affection which is met with in bovines, the pig, and dog as a fungating granuloma which occurs most commonly in the testicular cord of the horse after castration, and may be either in or outside of the scrotum, inguinal canal, or abdomen. Also as fibrous tegumentary tumors, in the lung, maxillary, and pental sinus, which may be generalized. Poncet and Dor have now identified a similar condition in the human subject in the form of neoplastic fungating ulcerative granulomata, from a pea to a nut, developing by means of a pedicle from the derma. They met with it in the fingers, thenar eminence, and shoulder. Histologically the growth was a "granuloma," and from it a pure cultivation of staphylococcus pyogenes aureus was obtained. They are probably always the result of suppuration, and are really only exaggerations of what used to be popularly called "proud flesh." The following are examples: A moist cherry-red tumor, the size of a large pea, developed on the palm of a lady following suppuration. It was cured by ligature. Another was a tumor the size of half a walnut just below the knee, bright red and lobulated. It developed on a dermatitis, took three years to get as large as a raspberry and one more to reach the above size. It was excised under the idea that it was sarcoma, but on account of its age was composed largely of fibrous tissue. The idea entertained by Dor, Spick, and other writers that botryomyces are the real pathogenic agents is, I believe, quite erroneous. Pus cocci are undoubtedly present and quite sufficient to account for the lesion—a view I am glad to find held also by Sabrazés, Laubie and Jaboulay, and Bodin.†

*"Botryomycosis humaine," Congrès de Chirurg. de Paris, October, 1897; and good abs. in *Brit. Jour. Derm.*, vol. x. (1898), p. 209.

†"Botryomycose humaine," E. Bodn, *Annales de Derm.*, vol. iii. (1902), p. 289.

GRANULOMA ANNULARE.*

Definition.—A disease characterized by an aggregation of nodules or papules into a ring, which enlarges peripherally while it involutes centrally.

In 1893 I described the first recognized case of this disease as a case of lupus erythematosus which resembled lichen planus; since then I have had four other cases; Pernet, while acting for me, has recognized another, Pringle † and Sequeira each have shown a well-marked case to the Dermatological Society of London. These are all the cases I know of, unless lichen annularis is found to be the same disease.

The lesions occur chiefly about the wrists and hands, but also on the neck, especially the nape, where in the form of papules they have been present in four out of the eight recorded cases (three of mine and Pringle's case); the elbows and knees (one case); behind the ears, the face (one case), and near the border of the hair are less usual positions.

The most striking feature is the formation of rings made up by the aggregation of nodules from a millet to a hemp seed in size; these, although partially coalescing, nearly always remain recognizable as the component elements of the ring. The ring is oval or round, and clears in the center while it enlarges peripherally; sometimes part of the border also involutes and leaves a crescentic lesion with the concave portion sloping down into the normal skin. The center may be slightly reddened, normal, or slightly atrophic; the border raised from a sixteenth to an eighth of an inch above the surface more or less distinctly nodular, abrupt on the outer, sloping on the inner surface, and firm to the touch. The color may be deep red, pale red, or almost white, with a narrow red or violet areola. The surface may be slightly scaly, or corrugated, or even warty-looking (Pringle) to a slight degree, and one of my patients had had numerous warts on his hands, another had a single wart. The

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xii. (1894), p. 1, with colored plate. Reproduced in my Atlas, Plate LXVII., Figs. 1 and 2, together with a brief note of another case. Other cases are published under the name now employed in the *Brit. Jour. Derm.*, vol. xiv. (1902), p. 1, with colored and histological plate.

† Pringle, *Brit. Jour. Derm* , vol. xi. (1899), p. 435.

suggestion of a form of lupus erythematosus struck me at first in some of the cases, and Pringle compared some of the lesions to those of lichen planus, to which I had also called attention.

The disease usually commenced as a nodule or aggregation of nodules, one patient described a mattery head on some of them, and the number of plaques was from one to about a score in different cases. The development was slow, varying from months to years; my first case was of four years' duration, my last six months, but some lesions involuted spontaneously.

In the oldest woman, who had a strong tubercular history, the single patch on the wrist gradually changed its character, and developed into what appeared like a lupus verrucosus, which was nearly cured with salicylic acid plaster. She had a single nodule on the nape close to the hair. In the boy of eleven the lesions were only on the wrists and elbows and knees. On the right elbow, instead of a ring, there was an irregular aggregation of discrete pale purplish-red papules; there were some similar papules on the right knee and a ring undergoing involution; on the left knee a ring had gone, leaving only a red stain. This boy had a common wart on one palm.

In Pringle's case the neck, face, scalp, and back of the right wrist were affected, in the latter as a band of flat angular papules, like verrucæ planæ. There were also numerous discrete papules disseminated over the forehead and scalp; the patient had some also at the nape.

Etiology.—Seven were males, six between twenty and forty and one eleven years of age. One was a female, æt. fifty-two.

In one of my cases there was a strong family history of phthisis, in another they were said to have weak chests. In one, æt. eleven, the father was very gouty. In others there was no evidence of disease in themselves or their relatives. My fifth case was a gentleman, æt. thirty-four; he was positive that it began as a cut which he picked. It had been present four years.*

Pathology.—I have microscopically examined a papule from the nape of my first case, and found that the greater part of the papule was made up of a dense mass of cells, the chief por-

* The case is published in *Brit. Jour. Derm.*, vol. xiv. (August, 1902), p. 307, as the seventh case. Sequeira's, the eighth case, was shown after my report was sent in, and is published in the July number, p. 270.

tion of which was situated between two hair follicles, which were, however, partially embraced by the cell mass. There was very little increase of the horny layer, but the prickle cell layer was enormously thickened, and in one section it appeared to be prolonged in the course of a sweat duct. The papillæ were quite obliterated in the central portion, but not at the periphery, where they were broader but shorter. Beneath the cell mass was a sweat-coil showing cell infiltration round it, but, traced upwards it entered the cell mass, which was almost confined to the superficial part of the corium. At the side there was a small amount of cell exudation about some of the hair follicles away from the main papule, but it was not very marked. The sections were made several years ago, before differential staining, to show the nature of the component cells, was in vogue.

Quite recently * I have examined a nodule from the skin over the second knuckle about a quarter by one-eighth of an inch. It presented quite a different picture from the above nape nodule, and was much more like the histology of Galloway's case of lichen annularis, and induces me to admit the probable identity of the two affections. *Vide* p. 456.

The histological changes were most marked in the deep layers of the corium. In most of the sections the cell infiltration in the papillary layer, and immediately below it, was very scanty, but in the one illustrated, probably from the center of the nodule, the cell infiltration reached quite up to the epidermis. The cells were not massed together, as in the nape nodule, but in small clumps round the vessels, and were most abundant round the sweat coils. They were apparently a mixture of connective tissue cells and leukocytes. The vessels were dilated, the prickle cell layer was much thickened, and so was the corneous layer, but to a smaller extent. It will be noted that the center of the nodule was in the line of a sweat duct, and the general aspect was that of a chronic inflammation round the sweat coil and duct. The primarily deep seat of the inflammation is unlike any form of lichen. At the same time this nodule does not suggest a granuloma.

Clinically the extreme indolence of the disease, many of the

* August, 1902. After this article had gone to press I obtained a nodule from my last case, and the sections were made from the fresh tissue. A more detailed examination will be made later on.

lesions remaining for years with scarcely any change, show that it is no ordinary inflammation, and its circinate character and unsymmetrical distribution on exposed parts suggest a microbic origin.

Dubreuilh found the epidermis almost unaltered. In the middle of the dermis there was a focus of cellular infiltration, while

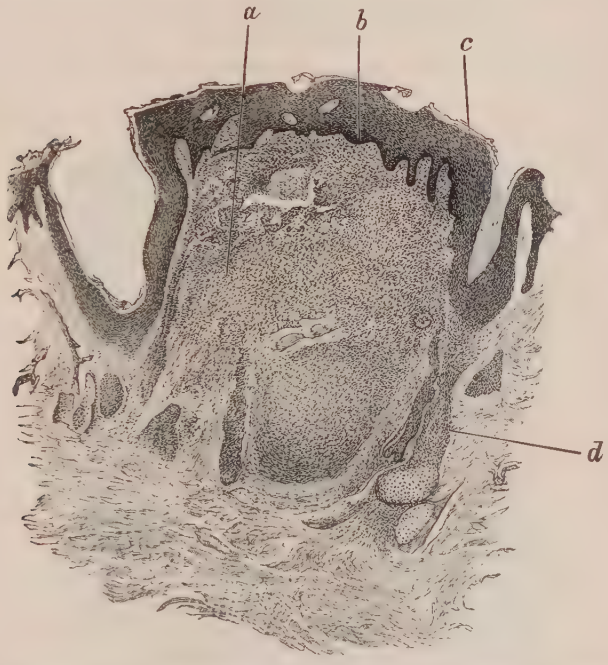


Fig. 63.—Papule from nape, showing, *a*, dense cell mass in the papillary layer of the cutis; *b*, increased thickness of prickle cell layer; *c*, unaltered horny layer; *d*, portion of hair follicle and sebaceous gland. × Ross 1 in. 16 in. tube.

the superficial part of the cutis, papillary layer, and the diffuse part including the sweat glands, were quite free.

The cells were infiltrated between the bundles of connective tissue, but this and the elastic tissue were unaltered. The cells he considered to be connective tissue cells. There were no giant cells and but few mast cells.

Diagnosis.—The disease it most resembles is lichen annularis. In both there are ringed lesions with crenate borders which occur on the hands; both are nodular and begin as nodules. Granuloma annulare is much more distinctly nodular through-

out its course, and begins from an aggregation of a group of nodules, while lichen annularis starts from a single nodule and spreads into a ring, and in a fully-formed ring the nodular origin is obliterated. Probably this difference in the mode of origin is one of the most distinctive features, but the histological resemblance in the granuloma and lichen annularis cases of the lesions from the hands seem to outweigh the differences, and their pathology is probably the same in spite of the great contrast presented by the nape nodule. It must be admitted that the histology of the Dubreuilh case, judging from the de-

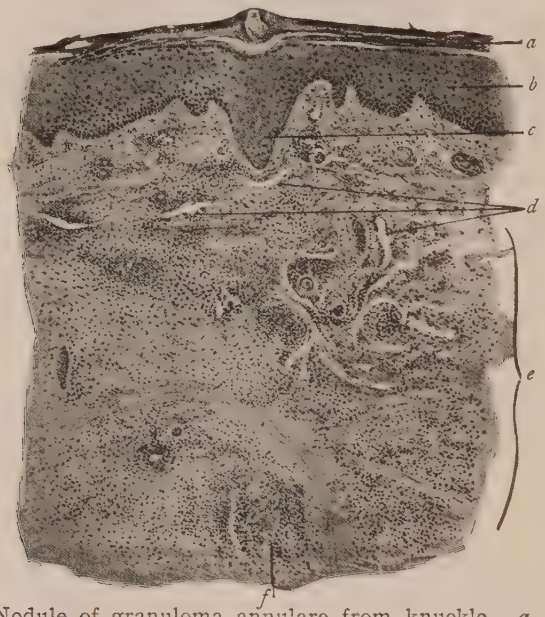


Fig. 64.—Nodule of granuloma annulare from knuckle. *a*, thickened corneous layer; *b*, thickened rete; *c*, sweat duct; *d*, dilated vessels; *e*, cell infiltration, most marked in subpapillary layer; *f*, sweat coil with dense cell infiltration.

scription, does not correspond with either Galloway's or my sections.

Treatment.—The most effectual treatment is the application of a mercurial plaster; the Beiersdorf 255 paraplast, which also contains carbolic acid, is one of the best. The lesions slowly disappear with this, and occasionally some of them involute spontaneously, but, as already seen, this is exceptional, the disease lasting for years if not treated.

CLASS IX.

MORBI APPENDICIUM—DISEASES OF THE APPENDAGES.

A.—DISEASES OF THE SWEAT GLANDS.

Affections of the sweat glands are "functional," in which the quantity or quality of the secretion is altered, and "organic," due to obstruction of the duct; the latter may be non-inflammatory, as in sudamina, or with inflammation in or around the sweat apparatus, either primary, as in miliaria papulosa, or secondary to the obstruction, as in miliaria vesiculosa. Hydradenitis, or inflammation of the sweat coil, is described along with furunculi. Pompholyx or dysidrosis and lichen planus, both of which have, in my belief, their seat in or about the sweat apparatus, are described among the general inflammations of the skin, as this view is not generally accepted. There are certain forms of eczema and psoriasis in which the primary lesion appears to be situated in and about the sweat pore, and Mibelli's porokeratosis is named on the belief in a similar connection. Arsenical keratosis of the palms and soles also commences at the sweat pores, and probably the keratoses in connection with hyperidrosis have the same starting-point.

HYPERIDROSIS.*

Deriv.— *ὑπὲρ*, super; *ἱδρώς*, sweat.

Synonyms.—Excessive sweating; Idrosis; Ephidrosis; Sudatoria.

Definition.—A functional disorder of the sweat glands, in which the secretion is excessive.

Hyperidrosis may be general or partial, slight or severe, acute or chronic.

Universal sweating may be symptomatic, as in acute rheuma-

* *Literature.*—"Des sueurs morbides," by L. Bouveret (Paris, 1889).

tism, phthisis, hectic fever, ague, rickets, or the so-called "sweating sickness" of the Middle Ages, etc., but it is only with those forms which are apparently idiopathic that we have now to do.

Symptoms.—The sweat is often quite cold, and, when general, is not very excessive, except in rare instances, when it may be so great as even to be fatal.* The local forms may be para-

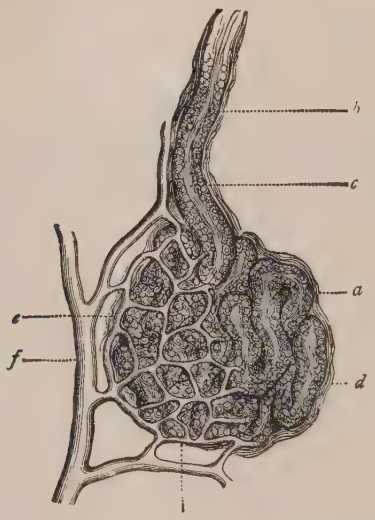


Fig. 65.—A Normal Sweat Gland, highly magnified (Neumann).

a, sweat coil with secreting epithelial cells; *b*, sweat duct; *c*, lumen of duct; *d*, connective tissue capsule; *e* and *f*, arterial trunk and capillaries supplying the gland.

plegic† or hemiplegic in distribution, or symmetrically localized to certain regions, especially the palms, soles, axillæ, and genital regions; and when in these hot covered parts, is often associated with bromidrosis.

Unilateral cases affecting the whole of one side of the body are rare; it is more often confined to one side of the head, in

*Myrtle of Harrogate, in *Med. Press*, February 25, 1885, relates the case of a man, æt. seventy-seven, who, after some flying pains and fever, began to sweat profusely, and continued to do so until he died exhausted, in three months from the onset of the sweating. Richardson, in the *Asclepiad*, vol. for 1885, p. 191, records another such case, and one of hemi-erythema followed by profuse hemi-hyperidrosis.

†S. Mackenzie, upper half of body affected, *Clin. Soc. Trans.*, vol. xviii., 1884.

the domain of the fifth nerve,* or to one limb, or portion of it, *e. g.*, the ulnar nerve, but even these limited cases are not common. There is usually a bright erythema of the part affected preceding and accompanying the hyperidrosis.

The palms and soles are very frequently attacked, either together or separately, and there are all grades, from merely moisture to profuse dripping in severe cases. If on the hands, it disables the patient from social duties or from many occupations, and may lead to *keratosis;* and if on the feet, it interferes with walking, the skin becoming sodden, corrugated, and in parts red and tender, or the epidermis may be enormously thickened on the points of pressure. In two cases, one on the palms, the other on the soles, I have seen a very superficial erosion of the epidermis commencing round the sweat orifices. In the palm case the black from his work outlined the borders of the erosions. In regions like the genitals, in contact with adjacent surfaces, intertrigo and eczema may arise. The sweating may be continuous or intermittent, aggravated when the weather is hot, or under emotion, or depression of the general health, and in the domain of the fifth is often excited by mastication. It may be temporary or permanent, and last for weeks or years.

Etiology.—Neither sex, age, nor social condition has any influence on its production. Faulty innervation is probably the main cause, but we can rarely detect the starting influence which produced the effect. In several instances of localized unilateral sweating there has been suppuration, presumably involving the nerve supply of the part, *e. g.*, suppuration of the parotid followed by sweating of the face of the same side, or bubo followed by inguinal sweating. In other cases there has probably been an undetected neuritis, which possibly may, in some instances, be gouty. In slight degrees, *e. g.*, in the palms, it is often congenital, and in rare instances, hereditary, or it may be vicarious, as in local sweating, *e. g.*, of the palms in ichthyosis.

Pathology.—Claude Bernard's experiments showed that section of the sympathetic was followed by hyperidrosis, and Brown-Séquard's, that excitation of sensory nerves would pro-

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 357, a case in Unna's clinic; the center of the face was affected, especially the tip of the nose.

duce sweating. In a case of Traube's profuse sweating came on a few days before death, and at the post-mortem a tumor was found in the cord, half an inch below the medulla oblongata. Weir Mitchell describes localized sweatings after division of a nerve by gunshot injuries, etc. These facts lead to the inference that injury or disease, which directly or indirectly interferes with the function of the sympathetic of the affected region, is the proximate cause of the excessive secretion. The fluid itself is normal in its constituents. A case of profuse post-mortem sweating some hours after death is recorded by J. A. Cones.*

The *prognosis* is variable, and there are seldom data to enable an opinion to be formed.

Treatment.—Careful investigation into the general health should be made and any defect rectified. Success is more hopeful in acquired than in congenital cases. The mineral acids and nux vomica suit many cases where there is debility; iron, quinine, and cod-liver oil are often indicated. Failing any general indications, certain special remedies may be tried. The tincture of belladonna pushed to the physiological limit is often useful, probably as a vaso-motor stimulant; or hypodermic injections of atropia might be tried, 1-150 of a grain increased up to 1-60; 1-6 grain of agaricin is much praised by Piering. I have found ergot in full doses, such as ʒss or more of the liquid extract three times a day, answer well for some cases; but the best of all, in my experience, is sulphur. A level teaspoonful of the precipitated sulphur in milk twice a day is the usual dose. Where it purges too much it may be combined with astringents, as in the following: pulv. cretæ co. ʒvj, pulv. cinnam. co. ʒij, sulph. præcipit. ʒj; a teaspoonful to be taken twice a day. What its *modus operandi* may be I am not prepared to say, but it has succeeded more often than anything else in my hands, and local treatment is not required, as a rule, with it.† Krahn says that sage is a powerful antihidrotic remedy; fifty

* *Lancet*, May 25, 1889.

† In Penwarden, U. C. H., a tailor, æt sixty-five, hyperidrosis had existed thirty-five years. It was usually confined to the hands and feet, but at its worst affected the whole body. It was absent as long as he preserved the horizontal posture, but came on directly he got up, and was always increased in the summer months. When at its worst he lost appetite and spirits, had a pricking sensation, and sometimes minute red

grains of sage leaves to a pint of hot water makes an infusion, of which a teacupful may be taken three times a day, or a tincture can be made.

Acetate of thallium was strongly advocated for the night sweats of phthisis, etc., but as it produces total alopecia in a few days it is only mentioned as a warning against it.

Local treatment is often of great assistance. Faradizing the part has sometimes been successful, but belladonna ointment or liniment rubbed in is one of the best remedies. For the feet, Hebra's * plan, which he said was always successful, was to keep them closely wrapped up, each toe separately, in an ointment of ung. lithargyri, changed twice a day, and the treatment continued for a fortnight; others recommended oxid of zinc ointment. These methods are too cumbersome, necessitate lying up, and are therefore generally impracticable, while it is by no means always successful even in acquired hyperidrosis. Duffin's modification of strapping the feet is better, as it allows the patient to go about; it should be done evenly and firmly, with stout lead or soap plaster. Thin's plan is to dredge boric acid, very finely powdered, into the stockings and boots every day, and to put in the boots cork socks, which should be washed and disinfected in boric acid lotion daily. This is cleanly and convenient, and one of the best methods of local treatment. Tartaric acid (Frédérique) and subnitrate of bismuth may be used in the same way, or rubbed over the body when the hyperidrosis is general.

Painting the soles with a three per cent. solution of formalin is recommended by Gerdeck to be used three times a day.

When it is desired to check sweating in the axillæ or elsewhere for some hours, holding a very hot sponge to the part for a few minutes is effectual. A powder of three per cent. of salicylic acid may also be dusted on, and sponging on one per cent. of quinine in alcohol is recommended by Fox of New York.

Astringents, such as one or two per cent. of alum and tannin in alcohol, are also employed, and are useful sometimes.

Disinfectant soaps, such as terebene, carbolic acid, and daily

papules appeared all over the hands. He had tried almost every variety of treatment, but, of all, sulphur internally did him most good, keeping the disease under for twelve months; but latterly, even that failed.

*See Formulæ: Ointments, No. 10, Ung. Diachyli.

ablutions, are adjuvants. Many other remedies are recommended, but there are none better than sulphur internally and boric acid or borax locally.

BROMIDROSIS.

Deriv.—βρῶμος, a stench.

Synonym.—Osmidrosis.

Definition.—Offensive sweating due to functional disorder of the sweat glands, or to alteration of the sweat after its excretion.

Symptoms.—It may be symptomatic, as in rheumatic fever, scurvy, syphilis, scrofula, uremia, or after certain ingesta, etc., or idiopathic. There is generally hyperidrosis, but sometimes the quantity is normal. It may be local or general; the local is the most common, affecting the feet only, but the axillæ, groins, and perineum may also be involved.

When affecting the feet, the odor is, *sui generis*, most penetrating and nauseous, and once smelled will not be forgotten: perhaps putrid cheese is the best comparison. The sufferer is, therefore, unfitted for society and indoor occupations. The stockings and boots are soaked with the evil-smelling fluid, and the feet sodden like a washerwoman's hands; often there is secondary redness, especially at the borders, much tenderness, and sometimes blebs are formed and walking then becomes impossible.

In other parts of the body the odor is different, and usually not so strong, except in the axillæ, where the natural odor is much exaggerated in some persons.

In certain nervous states, and in a few persons from idiosyncrasy, pleasant odors of the sweat have been noticed, such as that of violets, musk, and pine-apple, and one of Hammond's * cases was also unilateral. Weir Mitchell has observed that in lesions of the nerves the corresponding area exhales an odor like that of stagnant water.

Etiology.—Local bromidrosis is generally observed in young

* W. A. Hammond, "On Odors in Connection with the Nervous System," *New York Med. Rec.*, vol. xii. (1877), p. 460; and Monin, "Sur les odeurs du corps humain" (Paris, 1885); full abstract in *Amer. Jour. of Cut. and Ven. Dis.*, July, 1885, p. 211.

people and in the feet; it is most common in domestic servants, or others who have much standing. Some cases are due to emotional conditions, while the causes of others are quite obscure. Race has a distinct influence. Thus the negro and Chinaman has each a special odor disagreeable to other races, while the Chinese say we are equally objectionable to them.

Pathology.—As Hebra pointed out, the sweat of the feet is not offensive when first secreted, and Thin's investigations point to its becoming so from the presence of micrococci. These under cultivation develop into bacteria, which he calls bacterium fetidum. Moore, the botanist, thinks this bacterium is identical with that found on surface soil which reduces nitrates, sulphates, and phosphates into nitrites, sulphities, and phosphites. The micrococci may be readily seen if some of the sweat be dried on a cover-glass and stained with methyl violet. Similar micrococci can generally be found between the toes even without bromidrosis, getting there probably with dust.

Treatment.—Thin's plan locally, and sulphur internally, as described under hyperidrosis, is the most convenient and effectual treatment. The sulphur alone is generally sufficient. In the German army, rubbing the feet with mutton suet with two per cent. of salicylic acid is almost universally adopted, and where there is much walking, has the advantage of lubricating the feet. Latterly, a five per cent. solution of chromic acid, painted on the feet every three to six weeks, has been successfully employed. In very obstinate cases ten per cent. may be used; a two or three per cent. formalin solution has many friends. Salicylate of sodium in five to ten grain doses has cured some cases. For other methods see Hyperidrosis.

CHROMIDROSIS.*

Deriv.—*χρῶμα*, color, and *ἱδρώς*, sweat.

Synonyms.—Stearrhea or Seborrhea nigricans (Wilson and Neligan); Pityriasis nigricans (Read).

Definition.—Colored excretion of sweat or sebum.

Symptoms.—The first case of this very rare and curious affection was published by Yonge of Plymouth in 1709. In it col-

* *Literature.*—Author's Atlas, Plate LXXIX. Le Roy de Méricourt, "Mémoire sur la chromidrose" (Baillière et Fils, Paris, 1864). Wynne

ored sweating appears symmetrically distributed in various parts of the body, but chiefly about the orbital region, affecting the lower lid more than the upper; the other parts commonly involved, in the order of frequency, are the cheeks, forehead, side of the nose, while the whole face, the chest, abdomen, backs of the hands, finger-tips (once), and the flexures, as the axillæ, groins, and popliteal spaces, are more rarely affected. The color is usually black or sepia, but may be blue from azure to indigo; red, green, yellow, and violet sweats have been recorded, and in some cases the color has changed while under observation, as from blue to black, blue to ochreous, yellow to black. In Purdon's case it was light blue on the back and once on the chest, and yellow on the abdomen and back of the neck occurring simultaneously. The blue secretion was preceded for twelve hours by a moldy smell and a pricking sensation. The catamenia were reddish-green.

It appears either rapidly or gradually, forming a powdery or granular deposit on the skin, which is wiped off with some difficulty with water alone, but is easily removed with spirit of chloroform, ether, or glycerin. In four cases * I have seen

Foot, *Dublin Jour. of Med. Science*, August, 1869, and December, 1873, Roy. Acad. Med., Ireland, December 14, 1888; and *Irish Hosp. Gaz.*, February 16, 1874; also Fox's case and Report of Committee, *loc. cit.* Purdon's case, *Jour. of Cut. Med.*, October, 1868, p. 247.

* One of the cases, Kate L., is reported by Colcott Fox, in *Clin. Soc. Trans.*, vol. xlvi., 1881. It was referred to a committee—S. Mackenzie, Cavafy, Fox, and myself—for investigation, and was admitted into U. C. H. The committee were convinced of its genuine character, on one occasion having seen a slight but decided renewal of the pigmentation while in a Turkish bath. The pigmentation formed slowly. The report of the committee, detailing the tests employed, is published in vol. xv. of the *Transactions*. Another case reported upon at the same time was clearly proved to be an imposition. I have since seen another case at Shadwell, a woman, æt. forty-seven, of naturally dark complexion; the bowels were habitually confined, going three or four days at least without an action, and latterly she had suffered from articular pains. The discoloration came out gradually, beginning at the sides of the face, then spread to the cheeks and forehead. When seen, the upper half of the forehead, the temporal regions, and the skin between the ear and malar eminence, were of a blackish-brown color, with slight hyperemia of the adjacent parts; she said it had been almost black, but she had cleaned some of it off. There was evidently much fat in the secretion, and there was seborrhea of the scalp. Washing with soap and water

it was largely composed of fat, and was flaky or granular, and much more resembled seborrhea than sweating, and for these cases Wilson and Neligan's name, stearrhea nigricans, is more suitable. In other cases, such as those of Lecat, Billard, Bousquet, and Elliotson, etc., it seems to have been indubitably sweat, for it was actually seen to be excreted under observation. So also was the case of a child, æt. ten years, in which blue sweat was secreted from the whole of the nose, except where there had been an excoriation which was apparently the exciting cause. Irregular crystals soluble in chloroform were obtained and Gecheline,* the reporter, thought it was indigo.

* . . . . . .

It would thus seem that there are two forms—the **sweat** and the **sebaceous**; and probably the first is that where it forms rapidly, and the last gradually. In Féréol's case † neither sweat nor sebum was observable.

In a large number of cases there is obstinate constipation. The amount of pigmentation varies on different days, or, when

had very little effect, but it was removed with ether, when the skin still looked darker and redder than the rest. After a week's treatment with saline purgatives the discoloration was much less, but she still had articular pains, for which alkalies were prescribed, and she did not attend again. A third case was a girl, æt. twenty, originally under Mackay of Brighton. The affection had lasted a year, and was limited to the left cheek and eyebrow. Six months before the patch appeared she had a superficial burn, which did not leave a distinct scar, but the surface was slightly granular. The deposit was distinctly fatty, evidently seborrheic, and of a sepia tint. She suffered from obstinate constipation, the bowels only acting once a week. The left side flushed more than the right. In connection with this case may be mentioned those of Conrade, who had a case of blue perspiration of one-half of the scrotum; and of White of Harvard, a case of unilateral yellow chromidrosis in a man, *Amer. Jour. of Cut. and Ven. Dis.*, vol. ii., November 10, 1884. I have also had a case of yellow seborrhea in a lady of eighteen, sent to me by Dr. Cook of Cardiff. No hysteria, no constipation was present, no cause was ascertained. There was a yellow, almost orange, fatty layer extending over the forehead, cheeks, and orbits, shading off gradually from above down. It could be cleaned off with ether, but with some difficulty. It took two days to re-form sufficiently to be unsightly. The patient never ate butcher's meat. Scalp rather scurfy. Two months later there was no change, but in five months she was almost well.

* The patient was shown to the Medical Society of Odessa, and is reported in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 718.

† *La France médicale*, August 20, 1885.

it forms rapidly, at different times of the day. It is worse sometimes just before a catamenial period, and better just after it. It may go on for an indefinite period if the disordered health is not rectified, coming out and disappearing somewhat capriciously, and return of the constipation is very likely to induce a return of the disordered coloration. When checked in one place it has appeared in other parts of the skin and in the excreta; in Teevan and Brodie's case * there was black pigment in the vomit, feces, and urine. Billard's, Law's, and Neligan's cases are other examples of similar occurrences, and in the case of Maker of Colmar the saliva also was sometimes blue. Blue pus, blue urine, green and red milk have been observed on various occasions without chromidrosis.

Dubreuilh observed a case, a man of fifty-two, who had three attacks of red chromidrosis on the radial border of the thumb and metacarpal bone on each side, and afterwards on the bend of the wrist, and Sabrazé's and Cabannes' case was a man, æt. twenty-one, in whom red chromidrosis appeared after violent exercise, sometimes on the back of the right hand, sometimes on the left knee. They found a large quantity of indican in the urine. Barié's case,† a woman, æt. twenty-four, was yellow alternating on the two hands. The red sweat of the axillæ is a different affection.

Etiology.—Only eight out of forty-nine cases were in males, and although the ages have ranged from fifteen to fifty-seven, most (two-thirds) of them have been in young unmarried women. Uterine disorder has been present in many cases, but chronic constipation is the most frequent concomitant. The neurotic temperament is the greatest predisposing cause, and mental distress, hysteria, hypochondriasis, anxiety, grief, fright, have preceded or accompanied the attack in different instances.

Pathology.—The theory put forward is that the substance secreted in the sweat is the colorless indican, which is oxidized by exposure to the air or by some ferment into indigo; the chief ground for this theory being that in great meat-eaters and in constipation and chronic catarrh of the intestine, which is so common in these cases, indican supposed to be derived from the indol of the feces is more abundant in the urine than usual.

* *Medico-Chirurgical Trans.*, 1845, vol. xxviii.

† *Loc. cit.*, vol. x. (1889), p. 937.

The pigment in the case of Kate L. was in amorphous granules in the epithelium, and did not give the indigo reactions. Different opinions have been expressed as to the nature of the pigment, but all agree that it differs from any of the other mineral or vegetable powders of like color. Primarily the disease is doubtless a neurosis, and the clinical evidence points to the possibility of the pigment being excreted by either the sweat * or the sebaceous glands. In many of the cases the secretion is too rapid for it to be of bacterial origin, but Stott † reports two cases, father and son, who had pink sweat which stained the shirt at the collar, wrists, and tails, but the axillæ were unaffected. He succeeded in cultivating a torula, which varied from pale pink to red, according to the temperature of the tube—the lower the temperature the deeper the color.

Diagnosis.—The possibility of imposition must always be borne in mind. The circumstances under which it occurs will often give a clew. There is nothing but imposture which at all resembles this affection, and this circumstance makes many people skeptical as to its genuine character; but the case of Teevan, Duval, Foot, Fox, etc., in all of which competent witnesses saw it reappear, prove its reality.

Prognosis.—It ultimately always gets well, though it may last off and on for ten years. Kate L.'s case lasted five years at least, the other case two months. Its duration depends on the removability of the cause.

Treatment.—The successful treatment of the constipation, uterine derangement, or other defective health, is the only efficacious treatment; local remedies appear to have had no influence in most cases, but in my fourth case with yellow seborrhea a resorcin and spirit lotion locally, and the administration of salol internally, appeared to be the remedial agents after five months.

Colored Sweating, with quite a different pathology, has been also observed under the following circumstances:

* If Meissner's and Unna's view is correct, that the coil of the sweat gland secretes fat and the end of the duct sweat, disorder of the coil glands would account for the whole, and it would not be necessary to assume the involvement of the sebaceous glands.

† *Lancet*, February 15, 1896, p. 413. In the following week magenta sweating in a man is recorded.

1. **Green Sweat,** due to copper,* which has been taken into the system by the food, drink, or air, in particles or fumes, is seen mainly in copper-workers. The color may be bluish instead of green. In Kollman's case of blue chromidrosis, where the patient had taken much iron, Scherer found protosulphate of iron in the sweat, and to this the color was ascribed.

2. **Red Sweat** is often noted in the axillæ and genital region, due to micro-organisms,† which have developed in the hairs in these hot, moist parts, and have simply mingled with the sweat after its excretion; according to Babes ‡ these organisms resemble not only the red bacterium prodigiosum, but colorless growths of the hair and sweat. Red sweat is always associated with *leptothrix*, to which the reader is referred. Bacteria have also been observed in yellow (Eberth) and blue sweat.

Quite another kind, again, of red sweating is:

3. **Hematidrosis,** or **Bloody Sweat,** sometimes called ephidrosis cruenta.§ It may be defined as a purpura of the sweat glands, blood having been extravasated into the coils and ducts, and appearing mixed with sweat on the surface of the unbroken skin, at the orifices of the ducts.

The affection is a very rare one, and in some of the cases has been due to vicarious menstruation, or it may occur in young women of highly nervous temperament during violent emotion, and occasionally in the newborn.‖ It comes from limited areas, very diverse in different cases, *e. g.*, from face, ears, umbilicus, hands, feet, etc. Du Gard, quoted by Wilson, records a case, fatal on the sixth day, in a child of three months, where it came in large quantities from various parts of the body. The notorious case of Louise Lateau¶ with "bleeding stigmata"

* A number of cases are recorded by Dr. Clapton, *Med. Times and Gaz.*, vol. i (1868), p. 658.

† Balzer and Barthélemy, *Ann. de Derm. et de Syph.*, June, 1884.

‡ *Centralblatt. für med. Wissensch.*, 1882, p. 146.

§ McCall Anderson, "Lect. on Clin. Med." (London, 1877).

‖ These and other hemorrhages which occur in the new-born, *e. g.*, into the skin and alimentary canal, are probably due to the great changes which occur in the circulation after birth.

¶ Warlomont, "Louise Lateau," *Rapport méd.* (Paris and Bruxelles, 1875). "La Stigmatisée de Bahia," *Le Mouvement Méd.*, No. 1, 1877, quoted by Duhring.

was of this character in a highly hysterical subject, and there are like cases on record.

Nevins Hyde * reports a curious case in an emotional clergyman, but the *bona fides* of the patient was not above suspicion; but J. Dyer's case † was in an attendant at a Turkish bath, and his fellow-attendants had seen it appear and wiped it off; the skin was reddened before and after an attack, which lasted an hour.

The treatment would depend entirely on the cause; the hemorrhage itself would rarely require special treatment, but if it did it would be the same as for purpura hæmorrhagica.

PHOSPHORESCENT SWEAT

is a curious rarity. It has been observed in some cases of miliaria and after eating phosphorescent fish, while Koster ‡ records a case where the body linen became luminous after any violent exertion. § Phosphorescent breath in phthisis, in the pus of cancer, and in the urine and semen, when phosphorus is being taken as a medicine, are better known. There is strong reason for believing that the phosphorescence is due to bacilli, Beyerinck ‖ having found no less than six species of photobacteria, chiefly derived from fish, which will excite fermentation in sugar solutions in the presence of oxygen and peptone.

URIDROSIS. ¶

Synonym.—Sudor urinosus.

This is due to excretion of urinary constituents, especially urea and chlorids, by the skin. Urea is a constant constituent of the sweat in small quantities, but in disease may increase so much that white crystals, like hoar frost, have been deposited

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, December, 1897.

† *Medical News* (U. S.), June 22, 1875.

‡ Quoted in Carpenter's "Physiology," seventh edition, 1869, p. 500.

§ See Sir Herbert Marsh on the evolution of light from the living human subject (Dublin, 1842).

‖ Supplement *Brit. Med. Jour.*, January 1, 1891.

¶ A case of Uremic Uridrosis by Frederick Taylor, *Guy's Hospital Reports*, vol. xix. (1874), p. 405, refers to several other cases.

on the body. This was possibly the nature of the deposit on the skin of four young natives in Hyderabad, recorded by Frazer-Nash, though no examination of the deposit was made. As he mentions having seen several other slight cases, it is probably not uncommon in India, where the food is principally milk, fruit, coarse bread, and water.

It has also been observed in cholera and atrophy of the kidneys, in uremia, and in some conditions just before death, even where there has been no affection of the kidneys and bladder. A urinous odor of the sweat in uremia is not uncommon.

ANIDROSIS.

Deriv.—*a*, privative, and *ἱδρώς*.

Definition.—A disorder of the sweat glands, in which their function is more or less in abeyance.

This condition exists in all grades, from slight diminution to complete absence, and may be local or universal. It may be symptomatic, as in diabetes, albuminuria, fevers, etc.; due to a congenital defect, as in xerodermia, though the absence of sebum is of quite as much importance in that disease, or in people who always perspire with difficulty even in a Turkish bath; or, again, it may be temporary or permanent from defective innervation, or torpor from general malnutrition, etc.; or, finally, it may be from mere clogging of the cutaneous orifices, from not washing sufficiently often. In many skin diseases it is absent in the affected area, as in anesthetic leprosy, sclerodermia, general or circumscribed (morphea), in eczema or psoriasis, and in diseases in which the horny layer is increased, but it is very rare as an idiopathic disease. Whether congenital or acquired, when general it produces headache, painful flushing, etc., if the patient is exposed to great heat. Tändlau's congenital case, in addition to these symptoms, had very little hair anywhere, never had had any lower teeth, and only two incisors and two molars on the upper jaw. He had no nipples nor sign of breasts. The skin was smooth and thin, and sections showed neither sweat glands nor hair follicles.

Treatment.—Nothing can be done for cases of congenital

origin, but when acquired and apparently idiopathic, efforts at restoration should be made by a general tonic system, and shampooing after warm baths, especially alkaline and vapor, but not Turkish baths; cold sponging may be used in the morning, as part of the invigorating treatment.

MILIARIA.

Deriv.—Milium, millet.

Synonyms.—Miliaria crystallina; Sudamina; Miliaria rubra; Miliaria alba; Lichen tropicus; Prickly heat.

Definition.—An affection in which there is an obstruction to the sweat secretion, with or without inflammation as a cause or consequence.

Symptoms.—The non-inflammatory form is called **sudamina,** or **miliaria crystallina.** It is simply the result of the sweat being unable to escape, owing probably to an accumulation of epithelium at the orifice of the duct when the sweat function is in abeyance, as in fevers; then, when secretion is restored, especially by a "critical sweating," the fluid, being unable to escape by the natural channel, is effused under the horny layer, and forms a vesicle. The vesicles are very minute, closely crowded together, but rarely confluent, with clear or pearly contents with an acid or neutral reaction; the fluid is absorbed in a few days, leaving slight desquamation. The vesicles occur most abundantly on the trunk, especially the neck, chest, and abdomen, but they may come anywhere. They form rapidly, do not enlarge after the first few hours, and get well in a few days, unless fresh crops appear, which may keep up the affection for weeks.

Miliaria Vesiculosa et Rubra. This is an inflammation in the sweat-pore area, and the lesions may be simply acuminate, pin's-point-sized, bright red papules, or crowned with vesicles or pustules. They arise in great numbers, chiefly upon the trunk, especially on the back, but may also be distributed on the face and limbs. They are closely crowded, but discrete, though they are frequently in irregular groups of three to six, and the fluid, being inflammatory, is of alkaline reaction. There may be a

general redness of the skin in the affected area. When there are only bright red papules it is *miliaria rubra;* when there are vesicles the fluid soon becomes opaque, and it is *miliaria alba.* In a few days the contents dry up and leave slight desquamation; or if ruptured by scratching—for they do not rupture spontaneously—a small scab or dried exudation is left, which falls off in two or three days, and the process is at an end as far as those lesions are concerned, though by successive crops the eruption may continue as long as the hot weather lasts. Pricking or itching is often present, but not so much as in miliaria papulosa.

The "**red gum**" * or **strophulus** of infants is really a sweat rash in small groups of miliaria rubra, due to the infant's being too much swathed up; it is often unilateral, on the side of the face and arm which is held to the mother in nursing, when she suckles mainly with one breast.

I have seen a precisely similar rash in a man; it affected the trunk chiefly, which was thickly covered with small groups of papules or papulo-vesicles. He had had it ten years, and it came out either in hot weather or when he got hot at his work. Small doses of arsenic controlled it, but did not cure it. In another man the eruption was of the same kind, but he had been in the tropics.

Miliaria Palmæ et Plantæ. In rare instances minute vesico-pustules form at the sweat orifices of the palms, dry into horny plaques, and shell off, leaving a depression with scaly collar. This may go on for years if not treated. I have also seen it in an acute form on the soles of an infant.

Miliaria Papulosa, another variety of M. rubra, is the well-known lichen tropicus, or prickly heat, the presence of papules being its only title to the name of lichen.

It differs from M. vesiculosa in the inflammation being secondary to the retention of the sweat in that disease, while in M. papulosa the inflammation produces the obstruction to the sweat secretion.

* Author's Atlas, Plate XLII., Fig. 2. Sydenham Society's Atlas, Plate XXXIV.

It consists of minute, bright red, acuminate, discrete papules, closely crowded together, with vesicles or vesico-pustules sparsely interspersed. It comes out suddenly, preceded and accompanied by profuse sweating in other parts, and is attended with intolerable pricking and tingling. It affects large areas, chiefly in covered parts, such as the limbs, breast, flanks, and upper part of the forehead; the last position is the most common in my experience, but in the tropics, and in people who have had it before, it may come anywhere.

Miliary fever *(*Synonym.*—Sweating sickness) is an epidemic disease in which profuse sweating and miliaria are prominent symptoms. The first record of it was a severe epidemic in London in 1485; of late years it has been almost confined to the north of France.

Etiology.—Sudamina are most frequently seen at the termination of a fever, such as typhus, typhoid, acute rheumatism, puerperal septicemia, or in some prostrating constitutional condition, such as tuberculosis. It occurs at all ages when the vital powers are depressed, though the depression has only an indirect effect by producing an excess of sweat beyond the excretory capacity of the ducts.

M. vesiculosa occurs under much the same conditions, but is more readily re-excited by injudicious eating, hot drinks, or acrid sweat and too warm clothing, as in delicate infants, and possibly by chills when the skin is excited by the previous conditions.

M. papulosa is most common and most highly developed in hot climates, but is not unusual in England in the summer, though it is rarely intense here, unless the patient has had previous attacks abroad, for one attack strongly disposes to another, and very slight causes will reproduce it in the predisposed; too warm or close-fitting clothing, or the irritation of flannel, are some of many exciting causes, as are also rapid alternations of temperature, whether from cold to hot or from

* For a further account of it, see Ziemssen's "Encyclopedia," 1875, vol. ii. p. 485, and *Lancet*, October 1, 1887, p. 671, giving the symptoms of an epidemic in the central departments of France in the spring of 1887; also "Plagues Ancient and Modern; or, The Black Death and the Sweating Sickness," by Joseph Frank Payne, M. D. Also Kaposi-Besnier, vol. i. p. 165.

hot to cold; hence, therefore, too thin clothing may also conduce to it. It is most frequently seen in obese people, or in those who perspire profusely.

Anatomy.—The pathology has been sufficiently explained; the anatomy of sudamina has been investigated by Haight, Robinson, and Pollitzer, of New York,* Coats of Glasgow, and Török. The vesicle is formed between the deeper lamellæ of the corneous layer; the fluid in it is sweat, and a sweat duct is always to be found beneath the vesicle; the duct being obstructed, the sweat ruptures it, and is effused as described. Coats says that it is more than mere obstruction. There is inflammatory irritation of the sweat glands and ducts, and that it is leukocytic immigration which plugs the twisted part of the duct, and the epithelial cells are stretched and dissociated and a cavity is formed. In a case of acute rheumatism he found diplococci.

The fluid from a severe case of sudamina in typhoid fever was examined by Robinson, who found eighteen parts per thousand solid, fourteen organic and four inorganic matter, chiefly chlorids. No uric acid, sulphates, phosphates, albumin, or sugar.

In M. vesiculosa and papulosa slight inflammatory exudation doubtless occurs about the ducts, and in M. vesiculosa the inflammatory fluid is effused more freely than in M. papulosa.

Robinson and Török have both examined M. rubra. Robinson says that the inflammation is about the sweat pore, Török that it has nothing to do with it. As they are both good observers, we must assume that it is not always round the sweat pore, and in this Pollitzer agrees; though in the majority of cases it is connected with the sweat duct, he says all agree that the lesion is due to inflammation starting in the papillæ, and Robinson often observed a catarrhal condition of the sweat coil. On the whole, the evidence goes to show that the process is a sweat inflammation, and the vesicles are situated in the prickle cell layer.

Pollitzer accounts for the obstruction of the flow of sweat in prickly heat by a theory of the cells of the epidermis swelling by imbibition from the excessive sweat, owing to white skins being less oily than dark skins, and suggests oil inunctions after bathing, like the old Romans, as a preventive measure.

Diagnosis.—The minute pearly vesicles of sudamina can scarcely be mistaken for anything else.

M. vesiculosa is most like *vesicular eczema*, but in the latter there is a tendency to form patches, and the vesicles rupture

* "Miliaria and Sudamina," *Amer. Jour. Cut. and Ven. Dis.*, vol. ii., p. 362, "Prickly Heat," etc., Pollitzer, *loc. cit.*, vol. xi. p. 50, February, 1893. "The Miliaria Group," Pollitzer, *New York Med. Jour.*, January 6, 1894. "The Pathology of Sudamina and Miliaria," Coats, *Jour. Path.*, and "Bacteriology," October, 1892. Abs. *Brit. Jour. Derm.*, vol. v. (1893), p. 221.

spontaneously, while in miliaria the lesions are scattered irregularly, or the groups are very small and the vesicles do not rupture of themselves, and while each is on a red base the surface is not red, as in eczema. Miliaria is more transitory, coming in sudden repeated crops; eczema is a more continuous process.

M. papulosa is most like *papular eczema;* its association with sweating, the sudden onset, and perhaps equally sudden decline, its occurrence only in hot weather, the peculiar pricking sensation, and the minute size of the papules, scarcely allow of a mistake.

In children these sweat rashes often suggest an exanthem; their localization to hot situations, the accompanying sweating, and the absence of the constitutional symptoms of measles, scarlatina, and rötheln, etc., will generally guide aright; but when sudamina occur with scarlatina such criteria fail, and the knowledge of the possibility of such a conjunction is all there is to afford a clew.

Prognosis.—In temperate climates it generally yields readily to appropriate treatment. In hot climates it may pass on into an eczema or intertrigo in fat persons. Relapses are common, sometimes every summer.

Treatment.—Sudamina require no treatment. In the inflammatory forms, saline diuretics, such as the acetate and nitrate of potash, are the best remedies. In prickly heat much the same treatment is required; at the same time, search must be made for exciting causes, and rest, light clothing, and simple diet must be enjoined; these precautions, with saline aperients and lemon or lime-juice drinks soon give relief. To avoid future attacks care should be taken to prevent exposure to rapid alternations of temperature, especially chills, and woolen materials are therefore preferable to cotton for underclothing. Locally, calamin lotion, a weak lactate or acetate of lead, or a very weak liquor carbonis detergens lotion (Lotions, F. 1, 3, 38, 39, 41), may be employed. Alkaline and bran baths at a temperature of 90° to 95° F. often give relief. Zinc and starch dusting powders or finely powdered boric acid and starch are also useful. One of these applications should be applied whenever the irritation is great, so as to obviate scratching, which always aggravates the eruption.

Cribriform pitting, or Sudamina atrophica (?). I have seen three cases of this rare and undescribed eruption. The first was a lady,* æt. nineteen, in whom minute vesicles not quite superficial, as except with a lens they looked like normal colored papules, had appeared for a month past in groups of from three to six, and after lasting a day disappeared, and left minute depressions like atrophic pits or lines. They were situated on the cheeks and sides of the nose.

In a girl, æt. thirteen, the affection had lasted two years and was worse in the summer. All over the cheeks there was redness from minute telangiectic vessels, also minute vesicles situated in the center of the tufts of the vessels which left tiny scarlike depressions.

In another girl of the same age there was an even more marked condition of telangiectases and atrophic pin's-head pitting all over the cheeks, which had a cribriform aspect, but there were no vesicles while she was under observation. Some of the pits near the orbit were surrounded by healthy skin. The disease had commenced a year before in a patch on the left cheek.

A fourth case was probably an allied condition, but there was neither telangiectasis nor scarring. She was a young lady,† æt. thirteen, who had had the disease four or five years. It was confined to the eyebrows and a large patch on each side of the face, and these areas were crowded with minute pin's-point vesicles, which collapsed on pricking. In the summer, and when she was hot, there was redness of the affected area.

The presence of pitting shows that the vesicles were not epidermic in origin, and that they were probably situated in the papillary layer, but I have not been able to follow the cases up and ascertain whether the pitting was permanent, probably not. The condition appears to be something intermediate between sudamina and hidrocystoma, but no histological observations could be made.

C. Fox ‡ exhibited a similar case, in a girl of thirteen years, affecting the greater portion of the cheeks. There were no telangiectases and no comedones. With a lens minute conical

* B. 188, Private Notes.

† C. P., 108, Private Notes.

‡ C. Fox, *Brit. Jour. Derm.*, vol. viii. (1896), p. 220.

hyperemic papules were discernible. After observing the case for some months he came to the conclusion that the "process was folliculitis with subsequent atrophy." Galloway * showed another case, a woman, æt. twenty-six. It came on five years previously, after exposure to severe cold, and affected the whole face, ears, and front of the neck. There was minute pitting, general erythema, and minute telangiectasis. He thought the sweat apparatus was involved.

HIDROCYSTOMA.†

Synonyms.—Dysidrosis of the face (G. J. Jackson and Rosenthal).

Definition.—A non-inflammatory eruption, limited to the face, consisting of deep-seated vesicles formed in the sweat apparatus.

The disease consists of deep-seated non-inflammatory vesicles, and was first described in 1884 by Robinson of New York, where it appears to be fairly common, while in England it is rare, but in the west of Scotland Adam saw nine cases.

It is limited to the face, chiefly above the level of the mouth, especially on the nose and adjacent part of the cheeks, and in the middle of the forehead. The lesions are tense, clear, shiny, deep-seated, whitish vesicles, but they may be solid-looking, and the larger ones project considerably. Sometimes there is slight itching, but no sign of inflammation in or about them, the intervening skin being quite normal. They have been compared to boiled sago grains when small, while the larger ones are dark bluish at the periphery, Robinson says, but in a case of mine some of them were dark in the center like a comedo; the rest were translucent, or of the color of the normal skin. Rosenthal compared them to milium, but this seems correct

* Galloway, *loc. cit.*, vol. xiv. (1902), p. 168.

† *Literature.—Jour. of Cut. and Gen.-Ur. Dis.*, vol. ii. (1884), p. 362, and August, 1893, colored plate. "Dysidrosis," G. T. Jackson, *loc. cit.*, vol. iv. (1886), colored plate. "Dysidrosis," Rosenthal, *Deutsch med. Wochensch.*, No. 20, 1887. "Hidrocystoma," James Adam, *Brit. Jour. Derm.*, vol. vii. (1895), p. 169, with histology plates. "Miliaria Profunda," Pollitzer on the Miliaria group, *N. Y. Med. Jour.*, January 6, 1894, histological. "Hidrocystoma," G. Thibierge, *Annales de Derm. et de Syph.*, November, 1895; Abs. *Brit. Jour. Derm.*, vol. viii. (1896), p. 146.

only for the declining stage. They are discrete for the most part, but above the naso-labial folds are sometimes so crowded as to touch, but do not coalesce, and they have no special arrangement. The majority are from a pin's head to a hemp seed in size, but some are as large as a pea. When pricked a clear acid fluid escapes, and the vesicle collapses, but they do not rupture spontaneously, the contents being slowly absorbed. The vesicles develop most in the summer, and decline to nearly vanishing point in the winter, but seldom go away entirely; in Morton's and Hallopeau's cases the vesicles became more prominent at the monthly periods. The disease may recur year after year for many years. Middle-aged women who are exposed to heat in their occupations over the fire or washtub are the most frequent victims, but a patient of mine was a man of forty in good circumstances, and Robinson had a case in a man of twenty-eight. Unilateral cases with unilateral sweating have been several times observed, or the disease may be limited to the nose, with or without including the interorbital space.

Diagnosis.—The eruption presents few difficulties in diagnosis. Its limitation to the face, the persistent vesicles being deeply seated in the cutis, with acid contents and absence of all signs of inflammation, are characteristic, and distinguish it from the superficial, widespread, and transitory sudamina; from pompholyx, which is a disease of the extremities; from the obviously inflammatory eczema; and from all solid miliary lesions of the face, such as adenoma sebaceum, acanthoma, adenoma cysticum, etc.

Anatomy.—Robinson found that the vesicles arose from dilatation of the excretory duct of the sweat glands in the deep part of the corium, but argues that it is not a mere retention cyst, as the wall is always lined with cells derived from proliferation of the duct epithelium and the lesion in some respects is suggestive of a new growth. Pollitzer's and Adam's observations confirm Robinson's anatomical facts, but Pollitzer regards them as retention cysts, while Adam considers that the coil is involved rather than the duct; the secreting part being hypertrophied, and the duct being not large enough to discharge the increased secretion, dilatation behind it occurs.

Treatment.—The best treatment is to puncture the vesicles. Rosenthal found a two per cent. solution of naphthol in spirit beneficial. The result is palliative rather than curative.

TUMORS OF THE SWEAT GLANDS.*

The tumors arising from, or in connection with, the sweat glands are of pathological rather than clinical interest, as it is impossible to diagnose them in the present state of our knowledge without excision and histological examination. Only sufficient references can be given here to enable the student to follow up the subject. Some cases of rodent ulcer have apparently been traced to a sweat gland origin. In my case of Paget's disease of the scrotum there were certainly sweat gland changes of a cancerous character, but whether primary or secondary it was not possible to determine, and cancerous developments from these glands have been found by other authors, such as Fordyce, Darier, etc. Petersen, Elliot, Villard, and Paviot have shown that some cases which look like nævus verrucosus unius lateralis are really of sweat gland origin; and nævus corné of the sweat gland orifices, such as have been described by Hallopeau, Besnier, and Respighi, are probably of the same character. Betham Robinson at the Pathological Society, 1898, showed a sudoriparous cyst from the axilla one and a half inches across.

* *Literature.*—Unna's "Histopathology," pp. 699, 710, 806–814, abstracts and references to many cases. Fordyce, "Adeno-Carcinoma of the Coil Glands," *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xiii. (1895), p. 41, with many references to date. "Neviform Sudoriparous Tumors," Villard and Paviot, Second French Congress of Internat. Medicine at Bordeaux in August, 1895. *Sem. méd.*, 1895, No. 42. Audry, "Fibrome periacineux des glandes sudoripares," *Jour. Mal. Cut.*, vol. vii. (1895), p. 650. Morisani, "Adenoma sudoriparum," Naples, 1887, gives many references to old cases. Audry excised a cyst from the back of the ring finger of a man of sixty, and found it full of gelatinous contents, and thought from the histology that it was in all probability of sweat duct origin, *Annales de Derm.*, etc., vol. i. (1900), p. 123.

B.—DISEASES OF THE SEBACEOUS GLANDS.

SEBORRHEA.

Deriv.—Sebum, or *sevum*, suet, and ῥέω, to flow.

Synonyms.—Sebaceous flux; Stearrhea; Steatorrhea; Seborrhagia; Fluxus sebaceus; Acne sebacea; Pityriasis; Ichthyosis sebacea; Tinea amiantacea; Tinea asbestina; Eczema seborrhoicum (Unna); *Fr.*, Acné sébacée; *Ger.*, Schmeerfluss; Gneis.

Definition.—A disorder of the fat glands, producing increase and alteration of the secretion, which forms an oily, waxy, or scaly accumulation on the surface.

Symptoms.—Seborrhea may be general or local in its distribution, and in one or other of its forms is a common condition, especially in the regions where oil is normally most abundant, viz., the scalp, the upper and central parts of the face, the front of the sternum, the interscapular region, the pubes, and inguinal regions.

Since there is so much that is debatable in the nature and origin of the morbid forms included under this title, the clinical features will be set forth: first, of those varieties in which there are no external signs of inflammation, and, secondly, of those in which the inflammatory phenomena are more or less manifest.

In the first series is included an oily, a waxy, and a scaly form, although the last two are mixed conditions.

Seborrhea Oleosa [*Synonyms.*—Fluxus sebaceus; *Fr.*, Acné sébacée huileuse (Besnier); Hyperidrose huileuse (Brocq); Acné sébacée fluente (older writers)]. In this affection, which is a common one at puberty and onwards, and varies greatly in degree, the skin feels and looks greasy and shining, and a thin oily secretion is spread over the surface. Its most common position is on the face, especially the forehead, cheeks, and nose, and then the complexion is generally thick and muddy, and, owing to dust, etc., adhering so readily, the skin always looks dirty and acne vulgaris is a usual concomitant. On the nose it is often associated with venous congestion, rendering it a deep

red, but cool to the touch, while the openings of the follicles are unusually prominent, and filled with soft, fatty, easily expressed plugs, or covered with a dirty, fine, slightly adherent scale.

On the scalp, which is almost always also affected, it does not attract much attention, except in bald persons, to whose heads it imparts an extra polish.

It may also be seen on the trunk, especially the back, generally with acne vulgaris and comedones.

According to Unna the secretion is derived from the coil of the sweat glands, and not from the sebaceous glands, and this is the only affection he considers entitled to the name of seborrhea.

Wallace Beatty * urges many cogent facts in favor of the old view as to the origin of the secretion, but finds traces of an inflammatory process. Robinson of New York also argues in favor of the old view. At the same time no one disputes that there is a certain amount of fat in sweat, which in the new-born is much in evidence, while the sebaceous glands are small and inactive. Leslie Roberts proposes the term oleorrhea for excessive oily secretion from the sweat coils.

Seborrhea Sicca is generally made to include the waxy and the scaly forms, as they may be associated or shade off into each other. They are both very common and important, as they are the chief causes of premature baldness.

The waxy form **(S. cerea)** varies much, according to its degree and position, and the age at which it occurs. In the new-born it is the vernix caseosa, and though varying in quantity, is physiological rather than pathological; whether of coil or sebaceous gland origin is still disputed.

In the first year of life sebum is normally abundant, and, mainly from insufficient washing, often accumulates on the scalp, chiefly at the vertex, where it forms a dirty-yellow mass, sometimes of considerable thickness and cheesy consistence; when raised up the skin beneath is pale and healthy, unless it is

* *Brit. Jour. Derm.*, vol. vi. (1894), p. 161, a good review of the pros and cons of Unna's views, with original observations. Unna's "Histopathology of the Skin" should also be referred to. See also Seborrhea discussion opened by Colcott Fox, *Brit. Med. Jour.*, vol. ii. (1901), p. 855; also at Manchester meeting of B. M. A., 1902.

irritated by decomposition of the fat, when it may set up an eczema—a not infrequent event; otherwise it can scarcely be said to transgress the physiological limit. The origin of this

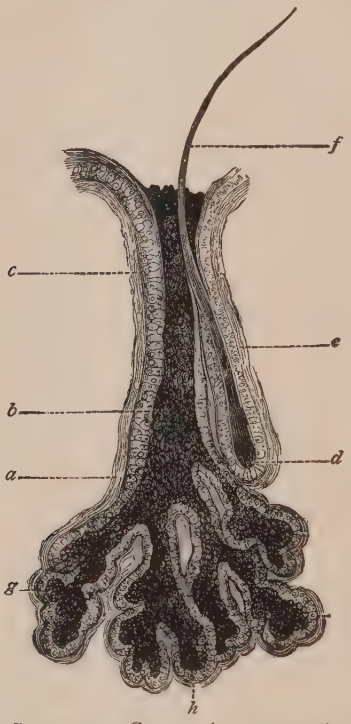


Fig. 66.—A Normal Sebaceous Gland, in connection with a lanugo hair (Neumann).

a, connective tissue capsule; *b*, fatty secretion; *c*, *h*, fat-secreting cells; *d*, root of a lanugo hair; *e*, hair sac; *f*, hair shaft; *g*, acini of sebaceous gland in connection with an ordinary hair may be seen at the beginning of the section on diseases of the hair.

fatty deposit is also said by Unna and others to be not of really sebaceous origin, but there are many who hold that it is.

The same may be said of the fatty secretion called smegma, which may accumulate on the glans penis under a long prepuce, and in women on the clitoris or labia where proper ablutions are not practiced. Here also its decomposition is liable to set up inflammation and produce balanitis or vulvitis.

At puberty and onwards it is seen most commonly at its

highest development upon the scalp, where it forms dirty-looking yellowish or greenish-brown, or even black plates or crusts of fat and epithelium. Its most common appearance is that of soft yellow wax. When in small quantity, or in the early stage, it can be seen that these fatty scales are seated at the hair follicles of the vertex, temples, and adjacent parts—and on removal of the secretion a funnel-shaped depression may often be seen round the hair.* The disease is then more serious than it appears, as it leads to atrophy of the hair, and if not perseveringly treated, to premature and permanent baldness, of which it is the most common cause. This it may do when it is insufficient of itself to attract the patient's attention, for in cleanly people it is easily overlooked, and the loss of hair is the condition for which advice is sought. In more severe cases it may extend all over the scalp, and form a fringe from one-half to an inch wide all round, with well-defined margin and fatty scales; more or less obvious inflammation is then generally present. It may also occur on the hairy parts of the face, where it also leads to loss of hair. In girls it may be seen on the eyebrows, with very slight redness and scaliness, but with gradual shedding of the hair. It may be associated with some defect in the general health, and is very difficult to cure completely.

In the milder cases the scaly element is more pronounced and the fatty characters not obvious until the surface of the scalp is gently scraped. Again, sometimes the secretion is more oily than waxy, and the patient complains that the hair is always moist as well as being abnormally shed.

The scaly form **(S. furfuracea seu pityriasiformis)** used to be, and is still, regarded by some authors as a separate affection, and has been also called pityriasis simplex, acné sébacée sèche, eczema seborrhoicum squamosum (Unna), dandriff, etc. Many persons are troubled by their heads being constantly covered with fine, white, shining scales, which brush or shake out on to their clothes, to their great annoyance. Examination of the scalp shows that it is more or less thickly covered with these

*In a young man at U. C. H. there was a general and extensive thinning of the hair with marked infundibulation round the hair and very little seborrhea, but in parts there were fatty plugs which could be expressed like a comedo In many hairs the medulla was interrupted, but in most it was quite absent.

scales in the same positions as the waxy form, and the lower layers are slightly adherent to the scalp. This condition is familiarly known as **scurf,** or **dandriff,** and generally leads to atrophy of the hair, which becomes dry, brittle, lusterless, and sometimes gray, and falls out or is easily combed out every day **(alopecia pityrodes** of Pincus), but in some cases the hair is abundant, though often gray or white. The scalp beneath the scales is generally quite white, but there may be considerable hyperemia, burning, or itching. It may, however, last for years without any external sign of inflammation. A similar condition occurs on the whiskers and beard, but less frequently.

On the face, generally from the irritation of soap, patches with small scales of white tint with or without slight subjacent hyperemia, are frequent in children; the patches are rather well defined, extend peripherally, but in irregular shapes, especially when several are confluent. Whitfield found a micrococcus, which did not liquefy gelatin, invariably present. In strumous children it may be pretty general on the trunk and limbs in small shining scales, and it is very often present along with lichen scrofulosus.

In the aged, with degenerated skins, dirty-looking branny or powdery scales may cover the whole body to a greater or less degree, and a similar condition occurs sometimes in diabetes and other chronic wasting diseases **(S. tabescentium).** The most modern view is not to regard these conditions as really seborrheic.

Under the name of **Alopecia Pityrodes Universalis,** P. Michelson describes * a rapid and general denudation of hair occurring in debilitated states, which differs from alopecia areata universalis neurotica in being preceded by abundant desquamation of fatty scales; in the apparently bald places, being covered with fine colorless lanugo hairs, or with hair rudiments; and instead of the skin being thin and lax, as in alopecia areata, being rather firmer and stiffer than normal. Moreover, the prognosis is good. Besides general tonic measures Michelson recommends local ablution with spirituous soaps or weak solutions of corrosive sublimate or chloral hydrate. It appears to me to correspond with S. sicca, except in the rapidity and extent

* *Monatsh. f. prak. Derm.*, 1882, No. 4, and Ziemssen, p. 418.

of the denudation of the hair, and in cases which I have seen there has always been some degree of visible inflammation present.

S. congestiva is the name given by Hebra to what is now known to be the early stage of lupus erythematosus.

S. corporis of Duhring will be presently described.

Etiology.—Excluding the infantile form, which hardly amounts to disease, it is particularly common at puberty, when all the glands become especially active. It is more common in women than in men after fifty, but, taking all ages, there is no material difference; fair people are more prone to S. sicca, and dark to S. oleosa. It appears to run in families sometimes; or, at all events, it is not uncommon to find that all the men of a family lose their hair prematurely, and seborrhea is generally present in such cases.

It is a much more obstinate disease in the old than in the young, and also more important, on account of the baldness it entails. In many cases there is some defect of health, generally of a debilitating character. In girls chlorosis is one such cause, and even young men suffering from seborrhea are sometimes pallid and out of health, and may be the subjects of struma, comedones, and acne vulgaris. After the climacteric period women are especially liable to it, frequently without any uterine disorder being present. It is said to be more common in those who sweat readily, but I have known many instances in which luxuriant hair and heavy sweating have been associated. Syphilis also is a strongly predisposing influence in both sexes, and other chronic exhausting diseases, such as phthisis and chronic cancer, are responsible for a certain number. A more transitory condition is often seen after severe illnesses, such as the exanthemata and other fevers, with considerable loss of hair. Smallpox especially is apt to give rise to scutiform, closely adherent crusts on the face, either broken up or in a continuous patch. Finally, in a large number of cases no cause whatever can be assigned for it, the patients being in robust health, and one can only assume a tissue proclivity which offers a favorable soil for the seborrheic micro-organism.

Pathology.—Although Henle and Meissner long ago had stated that the sweat glands secreted fat as well as water, Hebra's views were generally accepted: that all the conditions just de-

scribed were the outcome of seborrhea; that this was primarily an exaltation of the natural function of the sebaceous glands; that the difference in consistence depended mainly on the idiosyncrasy of the individual, on the admixture of scales from the more or less free exfoliation of the cells of the hair follicles and epidermis, and from imperfect fatty metamorphosis of the lining cells of the sebaceous glands. This comfortable and plausible explanation was rudely shaken by Unna in 1881 and 1894, who claimed the most important *rôle* as lubricators of the skin for the coil glands, the secretion being chiefly oleic acid, while that of the sebaceous glands was chiefly stearic acid. Much can and has been said both for and against this view of Unna's, and while no one disputes that oil is formed in the sweat coils, its amount * and relative importance are still matters of active controversy. Unna also advocated the view, which is pretty generally accepted, that, while seborrhea oleosa and the vernix caseosa are the only conditions of mere excessive secretion, the firmer kinds are really of inflammatory origin, "a dry catarrh of the skin, in fact," mixed with fat, while the clinical signs of inflammation may be wanting. The sebaceous glands are very little altered at first, but ultimately there is an obstruction to the issue of fat, and a consequent arrest of secretion, the lobules being full of fatty cells, but not of undegenerated epithelium. Unna confirmed the statement of Pincus, Piffard, and Van Harlingen, that the scales of seborrhea sicca are produced, not from the sebaceous glands, but from the horny epidermis; and Sabouraud says that they have a peculiar and specific cause, a gray-colored coccus and the "bottle bacillus." This scaliness is not necessarily, though generally, mixed with seborrhea. For Sabouraud there are two forms of seborrhea, viz., seborrhea oleosa and the comedo, which is a cystic transformation of a primitive seborrheic plug; but while Unna regards seborrhea oleosa as of sweat coil origin, Sabouraud says that it is a hypersecretion of the sebaceous glands due to the seborrheic micro-bacillus.

While not disputing that the microscope reveals signs of a very slight degree of inflammation, clinically there is usually no evidence of it, and after removing the fatty crusts the skin looks quite white and normal. Clinically, therefore, it is convenient

* Kreidl says that there is one per cent. of fatty acids.

to use the old nomenclature for these affections with fatty deposition on the skin without external signs of inflammation, and to describe the definitely inflammatory forms separately.

While for Unna the "morococcus" he has found is the cause of both the apparently non-inflammatory and the obviously inflammatory conditions, Sabouraud regards the seborrheic micro-bacillus as the cause of the true seborrhea, while various forms of inflammation are excited by the addition of other microbes, *e. g.*, staphylococcus aureus, or a gray-cultured coccus; hence on the seborrheic basis arise acne necrotica varioliformis, acneic furunculosis, chronic furunculosis of the neck, sycosis and acne keloid. While the chief points of controversy are set forth, it must be left to future workers to show which views are correct.

Diagnosis.—In the absence of secondary inflammation the diagnosis is not difficult.

S. sicca is most like *eczema*, but the crusts are fatty, and do not consist of inflammatory exudation, and, when raised, the skin beneath is white and dry, while in eczema it is red and moist. In scaly seborrhea hyperemia is either absent or slight, the itching is comparatively little and often absent, the pityriasis is diffused over the scalp, and is always dry throughout its whole course; in eczema the redness is always well marked, there are generally discharge, marked infiltration, and itching, and it is often only partial in its distribution.

This form is also like *psoriasis*, but psoriasis is always in well-defined patches, the scales are adherent, very abundant, and larger than those of seborrhea, and, when removed, the surface below is very red and the disease is seldom limited to the scalp.

Seborrhea of the face, with hyperemia, is very like a *slight eczema;* here, again, there is never any discharge, the scales are evidently chiefly fatty, and there are often other signs of sebaceous disorder.

The diagnosis between seborrhea of the face and *lupus erythematosus* is given under the latter disease.

Prognosis.—In infants and young people the prognosis is good, but when of long standing it is always obstinate, and may be incurable; but it can always be temporarily benefited and be kept under by applications once or twice a week. On the scalp, even in the comparatively young, if of long standing, it is

often fatal to the hair of the affected region, restoration rarely occurring, and then being only partial; but in recent cases there is fair hope of success.

Treatment.—The indications for internal treatment are to be sought in the etiology; the defects in health should be carefully looked for, corrected, and every effort should be made to place the patient under the best conditions as regards himself and surroundings that circumstances permit. Iron and cod-liver oil are the two remedies of most frequent utility, but the alimentary canal often requires preliminary attention. Arsenic is sometimes useful in the scaly cases. Duhring speaks in favor of sulphur, especially in the form of calcium sulphid, one-fifth of a grain three times a day; but treatment on general principles is more reliable than specifics, which only find a place when the special indications are absent.

It must, however, be acknowledged that internal medication only plays a subordinate part in the removal of the disorder, and its microbian pathology explains what practical experience has proved, viz., that:

Local treatment is of the greatest importance. In infants all that is required is that the fat crusts should be softened with strips of flannel dipped in olive oil and laid on the scalp, or the oil may be well rubbed in, and the head washed thoroughly with soap and water; a little oleate or oxid of zinc ointment may be afterwards applied for a few days.

In older people, or where the crusts are very adherent on the scalp, the soap and spirit liniment will facilitate removal of the crusts and scales, and the addition of oil of cade, or the less disagreeable thymol, gr. xv in one ounce of the liniment, increases its efficacy. This would be used about once a fortnight as a preparation for other remedies, which for the scalp will be set forth under Seborrheic Alopecia.

Seborrhea nasi is often very troublesome, and produces much distress of mind to the young people who are most subject to it. If it is simply oily, a thorough washing with soap and water and then rubbing on a powder of sulphur præcipitatum ʒi, emol keleet or cimolite ʒix, is often efficacious.

If there are fatty plugs, whether soft or hard, these should be expressed with the blunt side of a curette or with the thumb-

nails, and the stronger antiseptic and spirit soap liniment should be rubbed on with flannel dipped in hot water, then rinsed off, and the same powder applied, or a calamin lotion with hydrarg. perchlor. gr. 1-4 to the ℥j or sulph. præcip. gr. iij to the ℥j painted on and allowed to dry.

Judgment must be exercised so as not to use the spirit soap too frequently and thus inflame the skin. In both these forms disorders of the alimentary canal are frequently present and must be attended to. Where the face is generally affected similar treatment may be employed, but probably less vigorously. Where there is only slight hyperemia, precipitated sulphur, more or less diluted with starch and oxid of zinc, may be scented with attar of rose and used with a powder puff; for the body ten to thirty grains of sulphur to an ounce of lanolin is all that is required, sometimes ℥j to the ℥j may be employed. Whatever the treatment adopted it should be energetically and perseveringly pursued.

SEBORRHEIDES.

This is a convenient term used by French writers for the various inflammatory eruptions which arise in connection with seborrhea, and is the analogue of syphilids, tuberculids, etc. It must not, however, be considered as proved that because seborrhea is an antecedent and concomitant of these forms of dermatitis that the seborrheic bacillus is the direct cause of them. It is highly probable that seborrhea only offers a specially favorable soil for the cultivation of various other organisms. As an example of how this may come about, *vide* Sabouraud's views as set forth in Alopecia Seborrhoica.

Seborrheic Dermatitis [*Synonym.*—Seborrhoic eczema (Unna)] comprises various forms of the second series in which the clinical signs of inflammation are present, and resemble more or less closely various forms of ordinary dermatitis.

Duhring was the first to point out that a certain form of inflammation of the skin, which had long been known under the name of lichen circinatus and other synonyms, was intimately associated with seborrhea capitis, and was, he considered, the same disease modified by position, and he called it therefore seborrhea corporis. Unna, from a careful study of

S. capitis by the microscope and of the clinical relations of the disease, came to the conclusion that not only was S. capitis an inflammation of the skin, seated chiefly in the coil glands rather than the sebaceous glands, but that the various forms of dermatitis which are met with in regions where the coil glands are abundant, such as the axillæ, groins, interscapular regions, and even the palms and soles, are not only of the same nature as S. capitis, but are in most, if not in all, instances due to the direct transference of the same pathogenic organism from the head to the region affected, and that in its new abode the irritative presence of the parasite excites dermatitis of various forms, which he would embrace in one large group, viz., seborrheic eczema.

There can be no doubt that much credit is due to Unna for an important generalization; but the majority of dermatologists, except his most faithful disciples, consider that he is giving to his seborrheic eczema too extended a meaning, which dermatology will be a loser rather than a gainer by adopting unreservedly.

Without disputing that there may be a microscopical amount of inflammation in all S. capitis, everyone will admit that only in a small number can it be recognized clinically, and I have therefore adhered to the old well-known term.

Under certain circumstances active inflammation may supervene, and on the body more or less inflammation is the rule, when the presumptive parasite is successfully planted out. It is proposed to discuss in the present section the varieties of dermatitis thus excited, all of which, in my opinion, it is not wise to include under the one term seborrheic eczema. As a matter of fact the dermatitis may imitate an eczema, a psoriasis, or a lichen, and a clearer conception may be gained of a multiform process by adopting terms that point out the clinical resemblances. It must be borne in mind that there is the possibility that these various inflammations may not be all directly seborrheic, but that the presence of seborrhea offers a suitable soil for the growth of other microbes.

Seborrhea Eczemaformis (the **Eczemaform Seborrheide**).* Seborrhea may go on for years upon the head without show-

* Author's Atlas, Plate X., Figs. 2 and 4, circinate eruption of the face and nape; Plate XI., extensive papulo-squamous eruption of the back;

ing any external sign of inflammation, and without even attracting the patient's notice, except by the gradual thinning of the hair which it induces; or, if the branny form, by the scaly dust that is shed upon the clothing. Then, under some depressing influence, either mental, such as worry or anxiety, or bodily illness, active inflammation supervenes; the scalp becomes hot and red with abundant flaky and fatty scales, and the affection is perhaps no longer confined to the hairy scalp, but extends beyond for a short distance, with bright redness of the skin, more or less scaliness, and a well-defined margin. Discharge is often absent, but may be easily excited by scratching or the slightest irritation, whether from injudicious applications or other cause; but, from the large admixture of fat, the crusts are softer and less adherent than in ordinary eczema of the head. The lower part of the face is seldom involved in such cases; but if there are any patches they are always well defined and do not discharge.

Unna also includes under *seborrheic eczema* the dry, scaly, slightly reddened patches, with well-defined borders, often seen on the back and sides of the neck, sometimes extending into the scalp. They are generally roundish solid patches, but sometimes have a gyrate outline.

They are the *lichen circumscriptus or simplex* of Vidal.

Round, well-defined, dry scaly patches are occasionally seen on the limbs and trunk, which are probably, but not demonstrably, of seborrheic origin.

A milder form of inflammation is, however, not infrequent as an independent affection on the nose, cheeks, or forehead, the affected area being only pale red, with defined margin and dry, scaly surface.

The *treatment* for this condition is that for other active inflammations of the skin, plus bactericides, of which iodoform is one of the best—*e. g.*, iodoform gr. 10, ung. zinci oleat. ℥j, or boric acid ointment ℥j, with gr. 4 of europhen, either ointment to be applied constantly. Sulphur from gr. 5 to gr. 20 is also valuable. Where the inflammation is not so active, resorcin gr. 10, and liq. plumbi subacet. ♏xx, adip. benz. ℥j, is a good

Plate LXXX., acute inflammation of the head and face, supervening after great worry on a long-standing seborrhea capitis. Fig. 2 of this plate illustrates eczema palmæ.

formula; and in slight degrees of inflammation precipitated sulph. gr. 10 to ung. simplicis ʒj, or weak ammoniated mercury ointment, with or without the yellow oxid, are excellent applications. These stronger ointments should be gently rubbed into the scalp two or three times a day.

Internally, any derangements of the alimentary canal must be rectified, and then such tonics as may be suitable should be given, with a supporting diet, but with very little alcohol.

Chronic patchy forms are most benefited by mercurial or sulphur applications; but resorcin, salicylic acid, or naphthol are good alternative drugs. Vasogen iodin ten per cent. ʒij, paraffin liquidi ʒij is a good formula.

On the body papular and scaly forms of inflammation are most frequently met with. *Eczema palmare*, which Unna considers seborrheic, is described with ordinary eczema.

Seborrhea Psoriasiformis (the **Psoriasiform Seborrheide**).* —This is one of the least common forms. It is the form of disease of which cases were described by Brooke † and by Wickham.‡ It consists of well-defined, bright red patches, with scanty, scaly, and fatty crusts, contrasting with the bright, silvery epithelial crusts which almost always cover a typical psoriasis patch which has not been interfered with, but it is very like a psoriasis in which the scales have been partially removed by treatment or free sweating. The individual patches are not large, roundish, and may clear in the center; but they may coalesce with others, and then cover a considerable area. The eruption is chiefly met with in the axillæ and on the trunk, but may appear slightly on the face and upper part of the limbs, but does not affect the usual psoriasis positions on their lower segments.

A few patches may also be seen on the scalp, and then they are more crusted; but more frequently there is only ordinary S. capitis, without signs of inflammation.

The *diagnosis* might be made by the distribution, the scales

* Author's Atlas, Plate LXXXI., Fig. 1.

† Brooke, "The Relation of the Seborrheic Processes to some other Affections of the Skin," *Brit. Jour. Derm.*, vol. i. (1889), p. 247, with colored plate.

‡ Wickham, Letter from Paris, *ibid.*, vol. iii. (1891), p. 256.

being more fatty and less abundant, by the surface being a deeper red than most cases of psoriasis and by the presence of S. capitis.

The *treatment* should be to remove the scales with soft soap and then rub in a mild parasiticide. Thymol, resorcin, or sulph. præcip. gr. 10 to gr. 20 to ℥j of lard, vaselin, or lanolin.

The S. capitis should also be treated, and any defect in the general health attended to.

Seborrhea Papulosa seu Lichenoides (the **Papular Seborrheide**).* [*Synonyms.*—Lichen circinatus; L. circumscriptus (Willan and Bateman); L. annulatus serpiginosus (Wilson); Seborrhea corporis (Duhring); L. gyratus (Biett and Cazenave).]

Definition.—A serpiginous, papular, ringed eruption, limited to the trunk and associated with seborrhea.

Symptoms.—Slight degrees of this disease, which was first described by Willan and Bateman, are fairly common, though it is often only discovered accidentally, as it gives rise to no inconvenience beyond slight itching. It is for the most part limited to the middle and front of the chest and the interscapular region; or in more extensive cases occupies a triangular area with the base at the shoulders and the apex at the lumbar region. It may occasionally spread over the greater part of the trunk; but the limbs, except where they join the trunk, and the face are never affected. It begins as a group of rounded, small pin's-head-sized, bright red papules, occasionally with a scale on their apex, which soon coalesce into a disc about two lines in diameter; and as this enlarges peripherally the center clears, forming a ring, the papular structure of which is more or less evident, while the central area is of a fawn color. When several rings coalesce the margin is broken, and a fawn-colored, slightly scaly area is produced, resembling tinea versicolor, when of considerable size, but bounded incompletely by a red, gyrate, slightly raised papular margin. Isolated lesions of circles, or segments of circles, are situated in the neighborhood of the main patch, and here and there are scattered papules ready to start a fresh one. Slight scaliness and marked greasiness (seborrhea) are almost invariably present on the skin.

* Author's Atlas, Plate LXXXII.

and seborrhea of the scalp is associated in a large proportion of cases.

Etiology.—The disease is most frequent in those who sweat freely and wash sparingly, and is so common in those who wear thick woolen underclothing that at the Blackfriars Skin Hospital it is familiarly known as "flannel rash." * It is more common in men than women.

Diagnosis.—The characteristic features are the fawn-colored areas, with red, papular, ringed, or gyrate borders, situated in the middle of the chest and back, and never affecting the limbs. The position and yellow color of the internal area render it easily mistakable for *tinea versicolor*, but the characteristic fungus of the latter disease is absent, and the tinea lacks the red papular border of the L. circinatus. The diagnosis from *pityriasis circinata* is given with that disease.

Treatment.—This is simple and effectual, and need only be local. Any mild parasiticide, such as glycerin of borax, thymol gr. 20 to adipis ʒj, rubbed in night and morning, will speedily remove the eruption, even when it has been present for years. A few weeks' watchfulness against recurrence, owing to insufficient treatment, and more frequent ablutions and change of underclothing are necessary to prevent recurrence.

SEBACEOUS CYSTS.

Synonyms.—Wen; Atheroma; Steatoma.

Definition.—A cystic tumor with sebaceous contents.

Symptoms.—Sebaceous cysts vary from a millet seed to an orange in size, are roundish in shape, and either flattened or hemispherical. They may be single or multiple, of doughy consistency usually, but if inflamed, may become quite pultaceous, or if old, rather hard. They are freely movable under the skin, not tender or painful, and grow very slowly as a rule. The skin over them is normal, or white from distention unless they are inflamed, when it becomes red, and the cyst may break

* In some lectures on "Lichen," in the *Lancet*, in 1881, I described and figured a fungus which I then thought was the cause of the disease, but further observation has convinced me that its presence was accidental. Micrococci are abundant enough, but where are they not?

down and ulcerate and perhaps fungate, resembling a rodent ulcer (see "Follicular Disease of the Scalp"). Their commonest positions are the scalp, face, neck, and back, but they may grow anywhere where there are sebaceous glands, and in rare instances, even where there are none normally, such as on the palms, fingers, soles, in the floor of the mouth, under the tongue, and even in the anterior chamber of the eye after wounds. These are sometimes called dermoid cysts to distinguish them, but are not true dermoids, which are of congenital origin. When the duct is patent, they are usually flat, not very large, and are commonly situated in the thick skin of the back and neck; but I have excised one as large as a walnut from the chest. It is from this kind that so-called horns may develop (see "Cornua"). When the duct is closed, they are usually globose, and grow most frequently on the scalp, but are hairless. They are most common in middle-aged women.

Multiple sebaceous cysts in every region of the body are considered separately. They are probably the same as the sudoriparous fat cysts of Dubreuilh (see p. 1058).

Another form is the tumors in connection with the Meibomian glands, from a pin's head to a nut in size, though not often larger than a pea. To these the term **Chalazion** is given; they often recur, and are sometimes numerous. Although these little tumors are generally placed among sebaceous cysts, Virchow years ago, and quite recently Weyman, have shown that they are really neoplasms of the granuloma order; and according to Weyman, a fungus can be demonstrated, which he calls the "fungus chalazicus," and considers it pathogenetic.

Pathology.—Sebaceous tumors are said to be caused by accumulations of epidermis and sebaceous masses in the follicles, with hypertrophy of their walls. Paget, however, regards them as new growths. The gland is obliterated quite early, and the secretion must therefore come from the cyst wall. The contents may be meliceric, *i. e.*, fluid and honeylike, consisting of free fatty granules and epidermic cells, or steatomatous of more firm consistence, with more epidermic cells and less free fat. Cholesterin is generally present, and sometimes coiled-up hairs. The cyst wall is described by Cornil and Ranvier as made up of connective tissue with flat cells and parallel lamellæ of ground substance. It is lined with epithelium, comparable to

that of the tunica interna of the arteries, and in it also fatty, calcareous, and atheromatous changes are common. To account for sebaceous cysts in the eye, palm, etc., after wounds, it has been suggested that at the time of the wound some part of a sebaceous gland had been transplanted on to the wounded part, but there are no known facts to support such a theory and probably the inclusion of epidermic cells of any kind is sufficient, just as dermoids are considered to be due to the inclusion of embryonic epidermis. Their possible origin from embryonic remnants in the cutis must also be remembered. Török's observations go to show that nearly all sebaceous cysts are really dermoids, that there are papillæ with an epithelial covering in the cyst wall, and that it was the exception to find fat in the cysts, and that therefore it could not be sebum. True retention cysts are macro- and microscopically distinguishable, and allied in structure to the double comedo.*

Diagnosis.—With the duct patent the nature of the tumor is obvious, and some of the contents can be squeezed out as further proof. When the duct is closed it may resemble a fatty tumor; but the position and absence of lobulation will generally indicate its nature.

Treatment.—The tumor should be excised, taking care to dissect out the whole sac, or it will re-form. The cyst itself is generally thin and easily ruptured, but it has a firm horny lining, which should be seized with the forceps after puncture, while the cyst is being separated. In chalazion the incision over the tumor should be made on the conjunctival side, so as to avoid a visible scar.

Multiple atheromatous cysts have been reported by various observers, but not all of them with quite the same characters.†

* L. Török, "Ueber die Enstehung der Atheromacysten (Epidermoide Franke)," etc., *Monatsh. prak. f. Derm.*, vol. xii. (1891), p. 437. Good abs. *Brit. Jour. Derm.*, vol. iii. (1891), p. 365. See also Sutton's Hunterian Lectures on Dermoid Cysts, and Reverdin, who analyzed thirty-two cases in *Rev. Méd. de la Suisse Romande*, March 15, 1887.

† Jamieson, numerous cutaneous cysts, *Edin. Med. Jour.*, vol. xix. (1873), p. 223. Maclaren, *loc. cit.*, vol. April, 1887, p. 932. Chiari, Vienna corr., *Brit. Med. Jour.*, April 12, 1890; also paper on "Atheromacysts," Inter. Cong. Berlin, 1890. Dubreuilh, "Kystes graisseux sudoripares," *Archives cliniques de Bordeaux*, 1896, No. 9. Bocellini, "Beitrag zur Lehre von den multiplex follicularen Hautcysten," *Archiv f. Derm.*

Dubreuilh and B. Auché described a case in a man of seventy-seven years, in whom there were tumors from a hemp seed to a pea in size, round, defined, firm, subcutaneous, but adherent, or slightly projecting. They were the color of the normal skin, unless very superficial, and then gray or yellowish, soft, pasty, or semi-fluctuating. On puncture a soft, whitish, buttery mass or a yellow, oily fluid escaped, consisting of 72 per cent. of fat, 19.5 of water, and 8 of divers residues. Under the microscope there were only fat and a few multinucleated cells.

They were in all regions, but chiefly on the trunk, in masses in the axillæ, many on the scalp, where they resembled wens, and a few on the limbs, but the palms and soles were free.

Microscopically they were found to be thin-walled cysts lined with flat epithelium, and derived from the sweat glomerulus, and they therefore called them sudoriparous flat cysts. A similar case in a young man, æt. twenty-one, was shown by Pringle at the Dermatological Society of London in 1898. In this case, when the cyst was pricked with a pin a turbid oil flowed out. In Bocellini's case, which was clinically very similar, in a man, æt. forty, the tumors were from a hemp seed to a bean or larger in size, contained olein and palmitin, and were clearly of sebaceous origin, the sweat coils taking no part in them.

Jamieson and Maclaren have also had cases with 250 and 150 tumors respectively. In Jamieson's case the contents were a turbid, brownish liquid, and he considered them sebaceous. Hebra and Rayer are said to have had cases, but they were different from the above. In Chiari's case, a man of seventy-four, they were innumerable, and he pronounced them to be true retention cysts, finding, like Bocellini, a horny plug; he also found growing hairs and epidermic cells. The obstruction is at the exit of the duct, and the cyst is found there, and not in the gland itself.

Dermoid cysts * of the skin are generally single. Multiple dermoid cysts are very rare. They are all remarkably—in fact,

u. Syph., vol. xlv. (1898), p. 81; references. Unna's "Histopathology," p. 891.

* In the *Brit. Med. Jour.*, February 18, 1888, Sibthorpe reports and figures a case of congenital pilo-sebaceous cysts as large as a cocoa-nut on the front of the scalp.

as a rule, indistinguishably—like fibroma tumors, from a pin's head to a hazelnut in size, until excised, or at all events incised, when sebaceous-looking matter escapes. In a case of Sangster's, reported by Pollitzer,* although most of them were like fibroma nodules, and therefore the color of the normal skin, those over the mastoid process and clavicles were of a lemon yellow, and were generally thought to be xanthoma until they were excised, and Pollitzer found that they were typical dermoid cysts, the wall presenting a well-marked papillary layer, the contents made up of cornified and degenerated epithelium and detritus, and in most cases a coil of hair and brownish or black pigment. Their numbers and benignity forbid treatment, unless they are in an awkward or unsightly position, when they might be excised.

Follicular Disease of the Scalp. In Guy's "Hospital Reports" Edward Cock,† and subsequently Goodhart, published a series of cases of tumors of the scalp which ulcerated and in some cases fungated, and were supposed to be derived from the sebaceous follicles. A still more extensively fungating tumor is published by Hutchinson, supposed to be secondary to a sebaceous cyst. These growths were chiefly situated on the crown of the head, but may also come elsewhere about the head and face. Thus, one of Cock's cases was on the abdomen, but it grew from a mole which was abraded. Goodhart examined the tumors, and found them to be mainly composed of epithelium, with imperfect septa of ill-developed fibrous tissue. They all seem to start from sebaceous cysts, and are, in spite of their epithelial structure, evidently benign. Rivington removed the very large fungating growth reported by Hutchinson, chiefly with Paquelin's cautery. The operation was attended with profuse hemorrhage, but there was no recurrence five years later.

Ballyntyne ‡ records two cases of congenital growths on the

* Pollitzer, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. ix., August, 1891; and *Brit. Jour. Derm.*, vol. iii. (1891), p. 398—also referred to under "Xanthoma."

† *Guy's Hospital Reports*, 2d series, vol. viii., Part I., 1852, p. 151, several colored illustrations, *ibid.*, 3d series, vol. xviii., 1873; *Hutchinson's Archives*, vol. ii., No. 8, 1891, Plate XXIX.

‡ *Brit. Jour. Derm.*, November, 1897, vol. ix. p. 421.

scalp which histologically were acanthomata. There was every stage of development of sebaceous glands, but only traces of the sweat glands and no hairs. The tumor in one case was of the size and shape of a child's thumb. Ballantyne suggests that an adherent amnion early in fetal life might have led to its formation.

MILIUM.*

Deriv.—Milium, a millet seed.

Synonyms.—Grutum; Strophulus albidus; Acne albida; Tuberculum sebaceum.

Definition.—A small pearly-white sebaceous tumor, situated just below the epidermis.

Symptoms.—Milia are situated chiefly upon the face, especially upon the forehead, orbit, and cheeks; they are generally about the size of a millet seed or smaller, and occasionally as large as a small pea; they may be in small or large numbers, are quite white when small, and may be translucent, spherical in shape, quite superficial, form slowly up to a certain size, and then remain stationary for years.

Variations.—As a rule, they have no special arrangement, but I have once seen them arranged symmetrically on the "clown-patch" of the cheeks in a young woman in the same way as will be described in comedones, and groups on the inner canthus are common in elderly persons. Occasionally they may be seen in other parts of the body, such as the scrotum and penis. Here, and on the eyelids, they coalesce into comparatively large flattish tumors from a pea to half a bean in size, assume a yellowish color, and may become very hard from the deposition of calcareous salts, chiefly phosphate, with a little carbonate of lime, and constitute then the so-called **cutaneous calculi.**† A case of osteosis of the epidermis of the sole is recorded by Warren Coleman.‡ An extreme case of milium-like condition

* Author's Atlas, Plate LXXXIII., Figs. 1 to 4.

† Barlow met with concretions of this kind on the abdomen, and Foster of Boston is quoted by Duhring as having met with one on the face of a young woman, where it formed a small, oval, hard tumor.

‡ *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 185.

of the red part of the lips was recorded by Fordyce,* yellowish dots and streaks appearing in close aggregation in vertical lines. They were, however, not true milium, but due to keratohyalin change in the epidermic scales. Minor degrees of it are not uncommon.

Etiology.—Milia are common in young infants (**strophulus albidus** of Willan), probably from overstimulation of the skin by being held too closely to the mother. They may, however, be present from birth, and are then of embryonic origin. They are most common in young adults, frequently in association with acne vulgaris, and sometimes follow pemphigus, forming small groups or single spots on the site of the bulla. Less frequently they may be seen after superficial inflammation from erysipelas, or cicatrices after atrophy or ulceration, as in lupus and syphilis. They are always present in the rare lymphangioma tuberosum multiplex either on or between the lesions. Frequently there is no assignable cause.

Pathology.—They are usually considered to be due to retention of secretion in some of the acini of a sebaceous gland, or to be undeveloped glands; but Robinson † of New York thinks that they are of two kinds, of which one consists of "miscarried embryonic epithelium from a hair follicle or from the rete," which contains no fatty epithelium and has no duct; the other has a duct and is really a deep-seated comedo, the contents consisting of fatty epithelium and cholesterin.

Diagnosis.—The milium masses on the eyelids of elderly people may be mistaken for *xanthoma* (see that disease for the marks of distinction). The usual white globules are quite unmistakable.

Treatment.—Having no duct, an incision should be made over them, and they are readily shelled out. A touch of iodin tincture may be applied to the sac if they recur. Hardaway recommends electrolysis by passing a fine needle, connected with the negative pole of the battery, into the little tumor. In infants, the free use of soap and water is generally sufficient.

* *Loc. cit.*, vol. xiv. (1896), p. 413, with colored and microscopic plates. *Vide* Pseudo-Colloid of Lips, p. 758.

† Robinson's "Manual of Dermatology," First Edit., p. 73.

MILIUM CONGENITALE (en plaques).*

I have described two cases of this rare congenital defect, Hans Hebra † and Erasmus Wilson ‡ have independently published a case each under different names, and Colcott Fox § has shown a case at the London Dermatological Society.

The condition occurs in patches on the head and face; the patch is of a pale reddish-yellow, but redder at times; the surface is finely granular, consisting of closely aggregated pale yellow pin's-point papules, the patch as a whole is slightly raised upon the surface. The sharply defined border is more raised than the rest, the papules are more distinct, and there are many comedones on the borders and a few scattered about the surface. The patches on the scalp are quite hairless. They are present at birth, and change very little, if at all, afterwards; possibly it may be due to adherence of the amnion at an early stage of fetal life, or to a deep-seated intra-uterine inflammation.

Microscopically I came to the conclusion that the structure which I at first thought were sebaceous glands were really identical with the milium due to miscarried embryonic epithelium, as described by A. R. Robinson.

The structure was made up of nucleated epithelial cells inclosed in a fibrous pseudo-capsule, and situated superficially in the corium. Nothing can be done unless the lesion is small enough to be excised and primary union obtained.

Hypertrophy of the Sebaceous Glands.‖ In this affection there is an actual increase of gland tissue by multiplication of the acini. In old persons it may sometimes be seen on the face, especially on the forehead, where slight degrees are not uncommon, and on the nose. One of the most extensive cases I have seen was that of a woman, æt. sixty, who had some jaundice,

* International Atlas, Plate XXX.; one case was previously reported in the *Clin. Soc. Trans.*, vol. xiii., 1880, with colored plate.

† Hans Hebra, "Congenital Defect of the Cutis," colored plate.

‡ Erasmus Wilson, *Jour. Cut. Med.*, No. 2, July, vol. i. (1867), p. 211, Nevus folliculosus.

§ Colcott Fox, Rep. of Derm. Soc. Lond., *Brit. Jour. Derm.*, vol. ix. (1897), p. 21.

‖ In the previous edition I called this affection "Atheroma cutis," but it had not then been examined microscopically.

probably from carcinoma of the liver. She had been densely freckled all her life, the freckling extending down to the lower-rib margin in front and all over the back. Besides this, round the orifices of all the glands of the whole face were flat, very pale yellow accumulations in the form of discs, 1-16 to 1-8 inch in diameter, with a minute slightly depressed puncture in the center. They were very closely set all over, but discrete, not at all raised above the surface, not perceptible to the touch, but isolated lesions may be seen in other cases as slightly raised

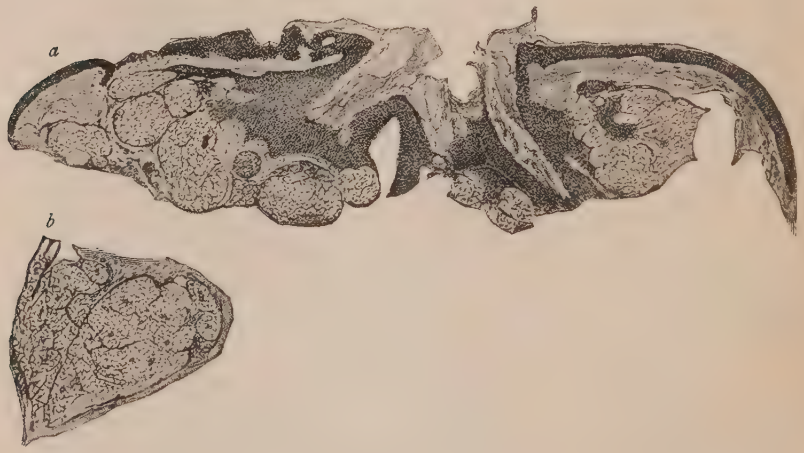


Fig. 67. *a*, yellow nodule consisting of hypertrophied sebaceous gland; *b*, Acinus from *a*. *a*, × 1 inch Ross 6 inch tube; *b*, × $\frac{4}{10}$ high angle 6 inch tube.

rather firm nodules. I have seen a very similar condition all over the neck of a woman with jaundice and general xanthoma, but the lesions themselves were quite different from xanthoma, and slight degrees are common when there is no suspicion of hepatic disorder. In a lesion from the forehead of an elderly man the only changes were great multiplication of the acini of the sebaceous glands, and atrophic degeneration of the lanugo hair follicide.

In November, 1895, Dr. Sangster sent a lady, æt. forty-one, to me of apparently the same affection on the temples and cheeks which had been developing from the age of sixteen. About a score altogether, they were from a pin's head to half

a hemp seed in size, raised slightly, firm and yellowish, the older ones opaque with minute vessels over them, the smaller ones slightly translucent, and all had a slight depression in the center and in some there was a plug like that of molluscum contagiosum, but it could not be expressed. It was found that the best way to remove them was to incise them and scrape them out with a curette, which was not done without difficulty, as they were firmly adherent. They healed without scarring. One near the angle of the mouth was excised, and proved to be an enormously enlarged sebaceous gland (Fig. 67). Pollitzer's * case was of the same character, but was in a vertical linear group over the left eyebrow of a man, æt. twenty-five, and had been developing six or seven years.

COMEDONES.

Deriv.—*Comedo*, a glutton.

Definition.—Black points or papules formed by sebum and horny cells blocking the orifice of the duct.

This common affection is seen chiefly on the face and back, neck and chest. Each comedo forms the well-known black point or pin's-point-sized papule so conspicuous on the face of many adolescents and young adults, and occasionally in older persons. Sometimes comedones contain the acarus folliculorum.† They vary in number from one here and there to myriads, peppering, so to speak, the whole countenance, but are most abundant on the forehead, temples, sides of the cheeks, and the nose. When numerous, they are associated with more or less oily seborrhea, and as they are very liable to inflammation, acne vulgaris in one or other of its phases is seldom absent. They can easily be expressed by the nails, looking like a maggot, and on the back and chest are often comparatively large, and may be double

* Pollitzer. A case of adenoma sebaceum. *Amer. Jour. Cut. Dis.*, vol. xi. (1893), p. 475. It is quite different from the classical adenoma sebaceum.

† To see the acarus, ten or a dozen comedones should be taken, and teased out in glycerin. They do not appear to have any pathological importance in the human subject, but a similar acarus in dogs sets up considerable inflammation, constituting "follicular mange."

from the fusion of two plugs by suppuration of two adjacent follicles with a bridge of skin between the orifices.

A very remarkable example of *scar comedones*, in which large single and double comedones existed in masses, was shown at the London Dermatological Congress in 1896 by Selhorst of The Hague in an acneiform nevus.* Thibierge has recorded a very similar case. I have seen them very numerous and large on the scalp as the result of extensive kerion. De Coquet † records an extreme instance on the face, after smallpox.

Lang showed a case to the Vienna Dermatological Society with comedones on the glans penis and prepuce; and besides this rare position, there was the additional rarity of atrophic scars at the orifice of the follicles. Neumann showed a similar atrophic scarring from comedones all over the usual positions in a woman.

The etiology, pathology, and treatment are discussed along with Acne Vulgaris.

Grouped Comedones. These differ from the preceding in their position, arrangement, and etiology, and in having no relation to acne vulgaris. Thin ‡ was the first to write about them, and I published cases corroborating what he had said, and showing that further observation by myself and others pointed to dyspepsia as the commonest predisposing cause, and that they occur chiefly on the cheeks and those parts of the face where flushing after meals is most marked. They form symmetrical groups of densely crowded black points on both sides of the face, and the individual lesions are much smaller and more uniform in size than in most cases of ordinary comedones. There is little or no tendency to inflame and suppurate. I have twice seen densely crowded comedones on the trunk, but without any tendency to group, and associated with suppuration of a large number of them. One was in an old man, and they were all over the abdomen; the other was a case of Sangster's, which he kindly allowed me to photograph—a middle-aged man, in

* "Nevus Acneiformis Unilateralis," Selhorst, *Brit. Jour. Derm.*, vol. viii. (1896), p. 419, with photos.

† Abs. *Brit. Jour. Derm.*, vol. v. (1894), p. 320.

‡ *Lancet*, October 13, 1888, and by myself October 27—both papers illustrated. See also Wetherell and Sympson, who report single cases in vol. i. for 1889.

whom the upper part of the chest and nearly the whole of the back were involved. Large comedones, single or in masses, may often be seen in the faces of old persons. They are not infrequently massed at the corner of the orbits. These are not to be classed with the preceding cases.

Children.—Hitherto comedones have been considered to be an affection not seen before puberty, but in June, 1882, I saw it at the East London Hospital for Children in a child aged three and a half years. This was soon followed by other cases, and similar instances have been met with by other observers, and it is now not an uncommon affection among the poor in summer; yet it is apparently a new condition, as I know of no previous notice of the affection prior to my own.* They appear on the upper part of the forehead and corresponding parts of the occiput in boys above three, on the temples in girls, and on the cheeks in infants, and occasionally in other situations. They are usually very densely packed, often grouped, occasionally symmetrically, like the adult cases, and give the part a very dirty and sometimes black appearance, and seborrhea is often present on the head. The contents are rather firmer than usual, containing less fat. Most of them do not inflame spontaneously, but do so if roughly squeezed or otherwise irritated.

The condition appears to be excited by warmth and moisture, and perhaps by other local irritants in predisposed subjects; it corresponds to the position of the cap in boys, and in infants appears to be due to their being held closely to the mother in nursing. I have seen it from the use of linseed poultices all over the back and chest, many of the comedones suppurating like ordinary acne. I have also known it to occur simultaneously in several members of a family, and it was stated to have attacked a large number in a school, suggesting a bacterial source of contagion. Haddon and others have met with similar instances pointing to contagion.

Their chief peculiarities consist in their being apparently due to local causes, among which want of cleanliness is the potent factor; in their tendency to group and to be more closely set; in their involving the hairy scalp; in their being less likely to set

* See *Lancet*, April 19, 1884; also a letter by Julius Cæsar, on May 6, in the same volume, and an article by Colcott Fox, April 7, 1888. Author's Atlas, Plate LXXXIII., Fig. 5.

up inflammation, and in their amenability to local treatment. Bathing with hot water, followed by friction with a liniment of sapo mollis half an ounce, spiritus vini an ounce and a half, or in slight cases rubbing in a weak sulphur ointment, or an alkaline lotion, such as glycerin of borax one part to three of water, are generally sufficient for their removal. A perchlorid of mercury lotion 1 in 1000, after soft-soap frictions, is also recommended.

ACNE.

Deriv.—*ἀκνή* or *ἀκμή*, a point, or, as some think, *α*, privative, and *κνέω*, to itch.

Synonyms.—*Lat.*, Varus; *Gr.*, *ἴονθος*; *Fr.*, Acné; *Ger.*, Hautfinne.

Definition.—The term acne is used for the lesions produced by inflammation, chiefly pustular, in and around the sebaceous glands and hair follicles.

Under this head are included: (1) Acne vulgaris or adolescentium, with the varieties acne cachecticorum and acne artificialis (all sebaceous); (2) Acne rosacea (partly sebaceous); (3) Acne scrofulosorum (follicular); (4) Acne varioliformis (follicular); (5) Acne keratosa (follicular); (6) Acne necrotisans (sebaceous).

Whenever the duct of a sebaceous gland is occluded, inflammation is very likely to ensue.

In A. vulgaris the sebaceous secretion itself forms the plug. In tar acne, and the acne occurring in those engaged in greasy occupations, the tar and fat stop the excretion of the sebum.

In A. cachecticorum and in the so-called bromid and iodid acne, the changes are probably in the blood-vessels; the latter and tar acne are described under Drug Eruptions. In A. rosacea the sebaceous inflammation is also secondary to the blood-vessel alteration, which produces the chief symptoms, while the pathology of A. varioliformis is still unsettled.

Acne is used in a much wider sense in France, being applied to many sebaceous and other affections, even when the lesions are not elevated into papules and pustules, but this abuse of

the term is gradually being given up. A reference to the Index will show into what category these disused synonyms should be placed.

ACNE VULGARIS.*

Synonyms.—Acne adolescentium; Acne disseminata; Stone pock.

Definition.—Inflammation of the sebaceous glands due to retained secretion, occurring chiefly in young people.

A. vulgaris is a very common disease in adolescents, though it does not form more than 2 1-2 per cent. of all forms of skin disease which come to a special department, but in private practice it forms six per cent. It is of all grades of severity, from one or two small pustules at a time up to thickly aggregated papules, pustules, and nodules in all stages of development and retrogression. While each stage of development has received a different name, A. cachecticorum is the only kind which is entitled to a separate designation and description.

Symptoms.—The disease does not occur before puberty; it is common from then onwards for about ten years, and declines almost to a vanishing point at the age of thirty. It is limited, in the great majority of cases, to the face (chiefly at the sides and on the forehead, but it does not go back into the scalp), the neck, chest, and back, chiefly about the shoulders, and its extent is largely dependent upon the number of comedones present, round which the inflammation commences, and forms at first a red papule, soon becoming a pustule on a red raised base, with a central black point **(A. punctata)**, or if the plug is within the gland, instead of at the orifice, there is a pustule without an obvious comedo **(A. simplex)**. When the pustule with its red base enlarges to the size of a hemp seed or small pea, it is **A. pustulosa**, and when the inflammation extends to the tissues round the gland, or begins deeply so as to form a hard, pea to a bean-sized, deep red or purplish nodule, which subsequently softens in the center, but seldom ruptures spontaneously, as it has no orifice, it is **A. indurata.** But all these names are superfluous, and will doubtless be dropped eventually. These lesions, although bilateral, are not symmetrical, are discrete, and not grouped in any way; hence the term *disseminata.* The

* Author's Atlas, Plate LXXXIV., Fig. 1.

process may stop short at any of these stages, especially if the contents be evacuated without violence; but as fresh lesions frequently form, and others involute or discharge, all phases of the eruption may be seen simultaneously in one patient. A. indurata, however, occurs chiefly in strumous subjects, and leaves livid indurations, which slowly disappear. The small, superficial pustules may leave no scars, but the larger and deeper lesions lead to considerable scarring and much consequent disfigurement, and on the chest and back small keloid tumors sometimes develop in the cicatrices. In some instances the comedones are numerous, but only a few inflame; in others, a large proportion go on to acne lesions. Where the comedones are abundant, more or less seborrhea, especially the oily form, is present, and the complexion is thick and muddy. Beyond the disfigurement and the tenderness of the large pustules the eruption produces but little inconvenience.

Variations.—A. vulgaris occasionally persists after thirty, and may exist to some extent throughout life; the back and chest are then considerably involved, with large indurated nodules, and I have seen the whole back one mass of confluent scars, pustules, and large comedones. Ord showed a case at the Clinical Society in April, 1892, in which the comedones and pustules ran round the body in a band, but not in the course of nerves. In a case of Lewin's of Berlin pigmentation of the site of the acne pustules occurred. Under adverse conditions the disease may generalize as in the case of a clerk,* æt. twenty-one, who was always subject to A. vulgaris in the usual positions, and after overwork and loss of rest, the whole face, trunk, and limbs to the elbows and knees were in four days thickly covered with red papules and pustules of the usual acne type, each pierced by a hair, or with sebum at the orifices; the glands also in the axillæ and groins were enlarged.

This exceptional generalization of A. vulgaris constitutes **A. cachecticorum,** which is not limited to certain regions, but occurs anywhere, except on the palms and soles. The lesions are not due, as a rule, to retention of the secretion, and there are therefore no antecedent comedones; hemorrhages frequently take place into the pustules, which have then a livid border and leave long persistent, purplish scars behind them. In this form

* Private Notes, 1880, p. 101.

it may be seen sometimes during recovery from scurvy, and I have seen a few cases in middle-aged and elderly people due to semi-starvation.* It may also in rare instances attack the follicles † of the limbs without any cachexia or traceable cause, of which I have seen a few instances.

Etiology.—Disseminated comedones and acne may be considered as almost identical as regards etiology; males and females are equally liable to them, and in hospital practice three-fourths of my cases were between the ages of fifteen and twenty-three, the extremes being thirteen to forty-four years; but one private case, a diabetic man, was sixty-seven years of age. Practically the disease is only prevalent from thirteen to thirty.

If Sabouraud's views are correct, that the seborrheic microbe is the cause both of seborrhea and the comedo, it is obvious that the presence of seborrhea capitis must play an important part in the etiology of the comedo and its sequence the acne pustule, and, as a matter of fact, they are generally concomitant. Indeed, Sabouraud says that there can be no acne without preliminary oily seborrhea, though if in excess it prevents secondary infections. On the other hand, while seborrhea may be present at almost any age, acne vulgaris and the comedo cease, as a rule, about thirty or earlier. Predisposing conditions are puberty and the physiological pilo-sebaceous activity which characterizes that period.

The frequency of acne in people with a thick skin and a sluggish circulation points to these also as factors. Local causes, such as cold winds, the use of irritating cosmetics, working with tar, paraffin, chlorin makers,‡ etc., and insufficient washing, play a certain part, either by plugging the orifices or irritating

* One of these, a well-marked case, was published by Tilbury Fox in the *Lancet* of April 5, 1878. A very severe and curious form in a boy of fourteen is published by Bronson in *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. vii. (1889), p. 401. Kaposi had a case of apparently ordinary acne of the trunk, which left slightly depressed discoid scars, from a lentil to an inch and a half in diameter; some of them were pigmented, and granulation tissue was found under some of the crusts. He called it acne cachecticorum. *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 316.

† Author's Atlas, Plate LXXXIV., Fig. 2.

‡ By electrolysis from chlorid of sodium, Sabouraud has proved that the plugs are ordinary comedones and contain the special micro-bacillus. The acne is severe.

the glands; but far more important is reflex hyperemia, produced by derangement of the alimentary canal, especially constipation and dyspepsia, which were present in a large proportion (more than half of my cases); uterine and ovarian disorders, especially those which lead to catamenial derangement, are also causes, and, even when this function is undisturbed, the eruption often undergoes exacerbation immediately before a period. All debilitating causes predispose to acne, of which anemia and chlorosis, too rapid growth, and perhaps masturbation, may be especially mentioned; mental and physical exhaustion have preceded fresh outbreaks in many cases; struma and scurvy not only cause, but modify, the kind of inflammation, leading to freer suppuration than usual. Diet has some effect, beer and the excessive consumption of sweets are predisposing causes, but this may be because so many acne patients have imperfect digestions.

Pathology.—According to Unna the comedo is the product of hyperkeratosis extending from the surface to the mouth of the follicle, and consists, therefore, chiefly of horny cells, mixed with normal sebum and not, as used to be thought, the result of abnormal secretion. The black head is the result not of dirt, but of degeneration of the compressed horny cells. Sabouraud's observations go to prove that the comedo is the result of bacteriological action, viz., that of the seborrheic bacillus which he has rediscovered, and that practically a comedo is in the main a "cocoon," as he calls it, of seborrheic bacilli, of course with horny and fatty cells and rudimentary hairs. Unna recognizes flask bacilli (spores of Malassez), and a diplococcus which he regards as the cause of seborrheic eczema; but these he considers accidental, as they are in the upper part of the comedo, and not invariably present, while another bacillus which is constant is situated in the lowest part of the comedo. The last are a third to half a μ broad by 1 1-4 μ to 1 1-2 μ long, with very irregular arrangement, though sometimes in a thread of three or four. They are, he considers, mucin-producing bacilli and the cause of suppuration, the presence of staphylococci being unnecessary and exceptional, and if present they are accidental and only superficially situated. If the bacilli get free into the supracomedo horny layers, a superficial acne pustule results. If the comedo is open at the bottom they get deep

into the follicle and the connective tissue round it, and an acne indurata ensues. The more superficial form leaves no permanent scar, the deeper one does either with depression or with a permanent increase of the connective tissue.

Such is Unna's explanation of the phenomena of acne, and it sounds feasible enough, but if Sabouraud is right, that the seborrheic micro-bacillus is the cause of the comedo, the *rôle* of Unna's bacillus is at a discount, unless he and Sabouraud are describing the same organism with a different name. I do not pretend to decide between them, but Hodara's * independent observations support Unna's. He found in an early stage of the comedo Unna's bacilli in small foci without any other organisms, while in comedones without acne they were quite absent. Sabouraud ascribes the inflammatory reaction to the secondary invasion of staphylococci producing a gray culture, apparently the morococcus of Unna. Gilchrist † in 1899 described a special pyogenic short, thick bacillus, which in cultivations became longer, thicker, and showed division, and various branching forms were observed in older cultures. He discredits Lowry's observations on ten patients in which he found staphylococcus pyogenes albus. His own appear to have been carefully made on ninety-six pustules from fifty-five patients.

On the whole, the tendency of the evidence is in favor of a special pyogenic organism, but there may be a "tertium quid"; *e. g.*, in "tar acne" the bactericidal action of tar is against the invocation of bacilli as the cause of suppuration, which appears to be mechanical. In like manner the effect of the comedo might also be largely mechanical, and most if not all of the micro-organisms found in the comedo may be secondary, and as harmless by themselves as a cause of the acne pustule as the demodex folliculorum which is so often present, but has no pathological significance.

Clearly the subject as a field for investigation is not yet exhausted.

Diagnosis.—The age of the patient, the dissemination of the

* Hodara, good abs. in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 721.

† Gilchrist, vol. ix., *Johns Hopkins Hospital Reports*, p. 420, "Research upon the Etiology of Acne Vulgaris."

lesions on the bust only, as a rule, the acute course of the individual lesions, the chronicity with exacerbations of the disease as a whole, the anatomical seat of the pustule, together with the presence of comedones, generally prevent any trouble in the diagnosis. The diagnosis of the so-called *drug acnes* is discussed with the drug eruptions.

A. rosacea occupies only the middle two-thirds, while A. vulgaris predominates on the sides of the face. A. rosacea patients are older, as a rule past thirty, and the sebaceous inflammation is only a part of the disease, the main feature being diffuse hyperemia of the face and dilated vessels.

Acne varioliformis has a special localization in the upper part of the face and the scalp, the latter is a position never affected by acne vulgaris, and the smallpox-like scars of the former are very distinctive.

When A. vulgaris is generalized, the circumstances under which this generalization occurs and the anatomical seat of the lesions will guide to a correct conclusion. The acute cases which somewhat resemble *variola* may be distinguished by the duration of the eruption, the absence of constitutional symptoms, and the absence of the eruptions from the forearms and wrists.

The *syphilitic* eruptions which resemble acne tend to group, which A. vulgaris seldom does.

Prognosis.—The ultimate result in all but a very few is spontaneous recovery. Most cases are quite well before twenty-five years of age, and few last beyond thirty. Treatment may, however, much shorten the period, and either completely cure or greatly ameliorate it. Success depends in most cases on the possibility of detecting the cause, and being able to remove it; and the apparently causeless cases are generally the most obstinate. Where the suppuration is deep or very free, more or less scarring results, but the majority of the lesions are superficial, and leave no permanent trace behind.

Treatment.—The treatment of acne must be both general and local; for although local treatment alone will remove any eruption that may be present, in many cases, only general treatment, judiciously planned, and perseveringly carried out for a considerable period, will prevent its recurrence. Where there are no indications for general treatment, seborrhea capitis is often the condition which requires removal. Many dermatolo-

gists of the present day, having regard to the microbic origin of the comedo, advocate local treatment only; but considering that the majority of people do not get comedones and acne at puberty, and that everyone must be exposed to so common a microbe as that of seborrhea, there must be a suitability of soil present also, sometimes no doubt congenital, but in other cases acquired, and, as experience shows, capable of modification by general treatment.

The measures to be adopted are hygienic, dietetic, and medicinal, and should aim at the general invigoration of the patient and the removal of digestive and other derangements; cold sponging of the whole body every morning, as much outdoor exercise as the patient's strength admits of, at the same time avoiding or protecting the face against cold winds, and regular and early hours are generally necessary. The aim should be to do all that is possible to avoid gastro-intestinal fermentation. The diet should be unstimulating, and where there is the least tendency to indigestion, highly seasoned dishes, pastry, sugar, and indigestible food generally, together with beer, champagne, and the stronger alcoholic drinks, should be avoided altogether, or taken very sparingly. Intestinal disinfectants, such as salol or benzo-naphthol in five-grain doses after meals are often useful. A furred tongue with prominent papillæ and constipation are very often present, and a mixture of soda bicarbonate, nux vomica, glycerin, and dill or peppermint water and (F. 8-10), are very useful. Cascara in some form may be taken separately as required, or saline aperients, seidlitz powders, or mineral aperient waters such as Hunyadi Janos, Apenta water, etc., may be indicated.

When there is anemia with constipation, which are frequently associated, the elder Startin's mixture of iron and aperients (Mixtures, F. 16), etc., is most useful; or if constipation is absent, tonic mixtures, such as Parrish's food, Easton's or Fellowes' syrup, the mineral acids, and nux vomica (F. 11 and 12), may be suitable. Small doses, ♏ij or ♏iij, of liquor arsenicalis, may be given for its tonic rather than for its direct effects on the skin, though it also appears to be directly beneficial in some cases, where the inflammation tends to stop short of suppuration, but it must always be given cautiously, or, by upsetting the digestion, it will aggravate the eruption. In the strumous

diathesis so often present, cod-liver oil with the syrup of the iodid or other form of iron is essential, and the oil is often advantageous in other cases, as soon as the digestive organs will tolerate it. Of the more direct remedies sulphid of calcium, a quarter to half a grain three times a day, is indicated, whenever there is a tendency to free suppuration, and glycerin in half-ounce doses is recommended by Desguin of Antwerp, Bulkley, and Gubler as generally useful in acne.

Locally, when comedones predominate over the inflammatory lesions and the skin is not very delicate, medicated soaps of various kinds are useful. A powerful one I often use is sapon. mollis, spirit. vini rect. āā ℥ij, thymol ʒj. Moistened flannel is dipped in the liniment, and then rubbed firmly on where the comedones are most abundant. It is then rinsed off with warm water and calamin lotion painted on if irritation is produced, or a resorcin ointment ʒss to ℥j rubbed in if there is not. There are many medicated soaps in the market of more or less value, especially the Eichoff series, some of which are mentioned in the Formulary in the Appendix, but none better than the above. Hebra's plan, much followed in Germany, was to rub on his spiritus saponatus alkalinus and leave it on. This has a discutient action which is of undoubted value, but disables the patient from his occupation or society, and is seldom practicable in this country, and must be reserved for severe cases when the patient is obliged or is willing to lie up.

The same may be said of the other German discutient treatment with naphthol, resorcin, and sulphur paste. When, however, the patient can be under close supervision, as in a nursing home, it may be usefully employed, as it shortens the time of treatment.

Bathing with water as hot as it can be borne, or holding the face over steam from a bronchitis kettle, or Lee's steam draught inhaler, is a good preliminary to the pressing out of the comedones, which prevents the development of pustules if done gently, but undue force sets up the inflammation that these various methods are designed to avoid. Many instruments have been devised to facilitate their removal, one of the best of which is a modification of Clover's acne presser (Fig. 68). The notch is placed over the comedo, and moderate pressure with a shaking motion expresses it. A watch-key may also be used,

but the sharp edges make it more painful, and likely to bruise the tissues without great care. Where the comedones are in great numbers, as on the back, curetting is valuable; it cuts off the horny covering of the comedo and facilitates expulsion. For acne of the back friction with a towel dipped in sea-water is beneficial. Massage of the face after steaming may be usefully employed in sluggish skins. To get rid of the double comedo the bridge of skin between them should be divided and the comedo scooped out.

When suppuration has occurred the earlier the pustule is punctured the less likely is there to be a scar; and even when

Fig. 68.—Clover's acne presser, as modified by myself. The shank is curved near the cup.

there is no pus visible on the surface a deepish puncture of the red papule will generally give exit to a little bead of it mixed with sebum. In A. indurata the incision should be more free, or multiple punctures, followed by bathing with hot water to encourage bleeding, is a good plan. The thickening of the tissues often left by acne induration is absorbed more quickly by the application of Beiersdorf's paraplast. hydrarg. fifty per cent., acid. carbolici 7.5 per cent. Leslie Roberts advocates electrolysis to each nodule. After the incision the puncture should be sterilized either by rubbing in iodoform or europhen, or, still better, by syringing out with a 1 in 40 solution of carbolic acid, using a hypodermic syringe. At first, every fresh tender papule should be done every day; but very soon twice a week, then once a week, will be sufficient. If the patient has the courage and perseverance to go through with this treatment, there is no doubt that bad cases improve more rapidly by it than by any other. Kaposi's lancet is made for the patient's own use, but very few have the knowledge and resolution to use it effectually. Instead of using steady pressure, they give themselves a sudden superficial prick, and fail to evacuate the pus.

Where the knife is dreaded, each nodule may be touched once

or twice a week with strong carbolic acid (ninety-five per cent.), or the acid nitrate of mercury diluted 1 to 4; care must be taken in using the acid nitrate of mercury, or scarring will ensue. Another plan (Stelwagon's) is to apply a one per cent. to four per cent. solution of bichlorid of mercury, three times the first day, and every three or four days subsequently. Sulphur in some form is useful in nearly all stages of acne; the precipitated sulphur may be scented, and applied with a powder puff three or four times a day; a lotion of ʒij of sulphur sublimat., ether., spirit. vini and glycerin, with aqua calcis and aq. rosæ, of each ʒiv, may be applied at intervals; or an ointment of precipitated sulphur ʒj to ʒiv to the ℥j of lard or vaselin; or a saturated

Fig. 69.—Kaposi's acne lancet.

solution of sulphur in vaselin may be used; hypochlorid of sulphur ʒj to the ℥j of benzoated lard, is one of the best, but must be always freshly made, and kept in a stoppered bottle; sulphid of potassium ʒj to a quart of water is a good, but disagreeable remedy, and is much improved by adding ʒj of tincture of benzoin; or potassium sulphid and zinc sulphate of each ʒj and aq. rosæ ℥v is a favorite formula in America; iodid of sulphur gr. 10 to gr. 60 to the ℥j, or sulph. præcip. and alcohol (Hebra), are other forms of using sulphur.

When the hyperemia is very great, soothing remedies may be necessary at first; a bismuth or calamin lotion, with a quarter of a grain of hyd. bichlor. to the ℥j is good; this may be used on the day after the more stimulating applications, and partially conceals the eruption in addition to its sedative effect. For obstinate cases of A. indurata, hyd. iod. gr. 2 to gr. 15 to ℥j, or hyd. biniodid. gr. 5 to gr. 20 to ℥j of benzoated lard, may be cautiously applied. These are only samples of a host of local remedies, all more or less useful in properly selected cases.

ACNE ROSACEA.*

Synonyms.—Rosacea; Bacchia rosacea; Gutta rosacea; Gutta rosea; Acne erythematosa; *Fr.*, Acné rosée; Couperose; *Ger.*, Kupferrose; Kupferfinne; kupfriges Gesicht.

Definition.—A chronic congestion of the face, leading to permanent vascular dilatation, with more or less secondary sebaceous inflammation.

Acne rosacea is a rather common disease, though it does not form more than two per cent. of all cases in hospital and six per cent. in private practice.† It is limited to the face, usually the middle two-thirds of the long diameter, and is of varying intensity, three grades of which may be conveniently distinguished; but all cases do not pass through them, as the condition may be arrested at any point.

Symptoms.—At first, there is simply temporary flushing after meals, exposure to changes of temperature, or, in women perhaps, just before the catamenial period. When this has gone on unrelieved for some time the face becomes permanently red, and many small vessels become prominent and varicose. The change is limited to the middle two-thirds of the face, affecting the cheeks, nose, chin, middle of the forehead, and occasionally the front part of the scalp in bald people, or to one or more of these regions, but the nose seldom escapes. The border of the redness is ill-defined, the vascularity can be obliterated for a moment by pressure, and the hyperemia being largely passive, the circulation in the skin vessels is sluggish. When very prominent, there is often seborrhea nasi; many ducts on the nose are plugged with sebum, imparting to it a greasy feel, and when it has lasted for some time, in spite of its fiery redness, it is often colder than normal to the touch. Distended varicose vessels appear on the sides and tip of the nose and on the cheeks, and the disease may go no further; but more frequently, after a variable time, usually months or years, but sometimes almost

* Author's Atlas, Plate LXXXV., Fig. 1. An average case.

† Bulkley's statistics in his monograph on acne are 1 in 70 in hospital practice, 6 per cent. in private practice, and about 3 per cent, in hospital and private practice.

simultaneously with the permanent hyperemia, papules, pustules, or nodules develop, which can generally be shown to have their origin in the sebaceous glands. This constitutes the second stage. In women and in the majority of men, although there are fluctuations, there is no material increase of the disease beyond this stage; but in chronic drinkers, especially if they are also exposed to the weather, *c. g.*, coachmen, there is an increase of connective tissue round the vessels, leading to permanent, intensely red, but non-inflammatory, nodulated thickening of the tip and sides of the nose, expanding it both laterally and longitudinally **(A. hypertrophica)**, while in extreme cases these excrescences develop into pendulous stalked tumors **(rhinophyma)**, overhanging the mouth and lower parts of the face. These extreme developments are very rare; I have met with one as large as a good-sized pear, and they may be larger; in another case, very large and lobulated, the patient, an alcoholic cabman, said the growths began shortly after being kicked in the face by a horse. Probably some determining factor which interferes with the lymphatic circulation is required, as alcoholic coachmen are common, and rhinophyma is rare. Hans v. Hebra * went further, and regarded it as a disease independent of A. rosacea, and saying that it may arise in temperate men and total abstainers. While it may be admitted that alcohol plus exposure is not the only cause, it cannot be disputed that the extreme forms are more frequently met with in chronic alcoholism, and minor degrees of hypertrophic noses are notoriously so, but I have seen a case in an excessive tea-drinker who had been a total abstainer for twenty years.

According to F. Hebra A. rosacea is, in spirit-drinkers, more frequently limited to the nose, and consists of vascular dilatation and seborrhea; while in wine-drinkers, the redness is diffuse and seldom limited to one region, and the whole face is bloated; and in those who affect beer cyanotic thickening with small nodules and pustules is more frequent. These distinctions are probably fanciful. Another form of hypertrophic A. rosacea occurs on the forehead, between the brows in very rare instances. Deep sulci where the natural wrinkles would be, are

*"Rhinophyma," *Vierteljf. Derm. u. Syph.*, 1881, Heft iv., with histological plate. It is depicted in F. Hebra's Atlas, Heft vii. Tafel 6, and the case of the cabman is published in my Atlas, Plate LXXXV.

produced by the thickening of the skin on each side of them simulating the leonine appearance of the nodulated leper. Besnier * records an extreme instance in an alcoholic shoemaker. I have seen a case of moderate degree. A similar condition is met with in the lymphatic form of mycosis fungoides.

In a lady † of thirty-four the disease began as a small patch of vascular papules and pustules over the zygoma, and spread downwards over the whole cheeks in about six months, and twelve months later the whole of the cheeks were swollen purplish-red, and covered with closely-set hemp-seed-sized superficial pustules, with a moderate number of large comedones interspersed. The nose was quite free, but there was a slight degree of it between the brows. The disease began in the summer, and although there was moderate dyspepsia, not enough to account for the condition. Great improvement was effected by scarification. I have had a similar case also in a lady of thirty.

Rosacea acuminata is the name I venture to give to a hitherto undescribed variety of eruption of the face. It is rare, but I have now notes of seven cases, and the papular elements are, I believe, seated in the sweat pore area, though I have no anatomical proof of this. It consists of minute or pin's-head convex red papules, most abundant on the cheeks, but they may also occur on the forehead and lower part of the face. A seropustular apex is sometimes present on the papules. The papules may be sparse or numerous, but are not grouped in any way—general congestion of the face is not usually present.

All but one occurred in young ladies between twenty-one and thirty-five, and although flushing after meals and other dyspeptic symptoms were present in a slight degree in the majority, I think dyspepsia played only a small part in the etiology. In two there was a strong probability of its having been excited by chills after being hot. Exposure to cold winds, and fire or sun heat, always aggravated the eruption. One lady, æt. sixty-two, had it associated with marked dyspepsia and rosacea, but, as in all the rest, the nose was spared. Ichthyol ℥v ter die succeeded in most of the cases, in removing the eruption, some-

* St. Louis Atlas, Plate VI., Fig. 2.
† Note Book I. p. 237, private cases.

times after other treatment had been tried and failed; but all the cases ran a slow course, with a tendency to recur after exposure to sun or wind. Fox and Galloway have shown cases at the Dermatological Society, and Fox recommended sulphur ointment gr. xx to the ℥j, which was used successfully in Galloway's case.

Etiology.—The disease is seen much more frequently in women than in men (five to one), but the difference diminishes after forty years of age. The age of onset, for the bulk of the cases, is over twenty-five years, beginning, in fact, at the age when A. vulgaris is ceasing to appear. The extremes I have met with are, sixteen years in a female and seventy-two years in a male, and Bulkley met with one æt. fourteen years and another æt. eighty-four. Comby,* however, breaks the record with a rickety child of three, whose parents quenched his frequent thirst with cider and water. A red nose from chronic passive hyperemia, due to a feeble heart, may occur in quite young children.

The main cause for both sexes is disorder of the alimentary canal, chiefly associated with the range of symptoms included under dyspepsia; flushing after meals, constipation, and lithemia being among the commonest symptoms. In women, also, uterine disorder is a common cause, and even when there is no apparent uterine trouble, the eruption is generally worse just before a period. A feeble circulation and exposure to inclement weather, or vital depression from illness, overwork, anxiety, etc., strongly predispose to the eruption, or aggravate it, if already present. Excess in alcohol in any form especially favors the development of the worst forms of the disease, and occasionally it appears to be due to local irritants, *e. g.*, ill-advised cosmetics.

Redness, thickening, and dilated venules may also be produced in the nose, by the chronic pustular folliculitis within the nostrils to which some persons are liable.

Rhinophyma occurs almost exclusively in men, but a case was shown at Mr. Hutchinson's museum in a woman, æt. fifty-one. On the tip of her nose was a tomato-sized tumor only a little redder than normal, smaller growths on the alæ nasi, and a flat florin-sized one on the chin, which had commenced twenty-five years before, while the nasal tumors had been present only ten

* "Le Rachitisme," p. 123 (Paris, 1892).

years. She had suffered from dyspepsia and flushing from the age of eighteen, but not from pustules; she was not addicted to alcohol.

Pathology.—The first change appears to be congestion, beginning in the deeper vascular layer of the corium, but afterwards affecting all the vessels. This congestion, generally of reflex origin, but sometimes from a direct irritation, is followed by secondary seborrhea or inflammation in the sebaceous glands, and perhaps other parts of the skin, producing sooner or later papules, pustules, or nodules, and ultimately paretic changes occur in the walls of the vessels, which become permanently dilated, thickened, and perhaps even new vessels form. In the hypertrophic cases there is a formation of new connective tissue round the vessels, and the rhinophymata are mainly composed of enlarged sebaceous glands and connective tissue. This makes the disease primarily a vaso-motor reflex neurosis, while Schwimmer regarded it as a tropho-neurosis, on what appear to me to be inadequate grounds. Unna claims it to be another manifestation of the seborrheic process, a sequence of seborrheic eczema, although he admits that it differs from all other seborrheic processes. The nodules he ascribes to a special folliculitis, but his statements on the question are not convincing to me.

Other theories have also been advanced, but do not fit the facts so well as the above.

Anatomy.—G. Simon examined a nodule from a drunkard's nose, and found that it consisted of connective tissue, traversed by enlarged vessels. The sebaceous glands were also enlarged, and filled with hardened sebum. He regarded the other changes as secondary to those of the sebaceous glands. Piffard examined a tumor weighing an ounce, and found that it consisted of connective tissue, with thickening of the rete and enlargement of the papillæ. The sebaceous glands were degenerated where they were pressed upon by fibrous tissue, but not otherwise changed. On the other hand, Hans v. Hebra found in hypertrophic acne a connective tissue new growth with numerous dilated and new vessels, the sebaceous glands numerous and enlarged, due, he considered, to the fibrous tissue cutting off some of the acini from the rest of the gland; and as secretion continued in these detached portions, the glands multiplied, while the retained sebum irritated the surrounding tissue to fresh growth. Rokitansky also found a large tumor to be entirely composed of fibrous tissue, containing large vessels, with no sebaceous changes. In my own case, the sebaceous glands were very abundant and conspicuous.

Diagnosis.—The age of the patient at the onset of the disease, the history of flushing after meals, alcohol, or exposure to changes of temperature, etc., the obvious vascular dilatation, the special distribution in the middle two-thirds of the face, and the symmetry * of the eruption, the papules and pustules following, not preceding the other symptoms, and the slow development of the disease, are its most diagnostic features, and distinguish it from *A. vulgaris*, in which there are comedones and no general redness, while the eruption is chiefly on the sides of the face, and often on the trunk as well.

Erythematous eczema is much more acute in onset and development, is not limited to the middle of the face, desquamates from the beginning, and is associated with irritation; nor are there the pustules of A. rosacea.

In *erythematous lupus* the surface is generally scaly, often with scarring, more projecting than the hyperemic stage of acne, more defined and raised at the age, and lacks the nodules of the hypertrophic stage of rosacea. At the same time, in the early stage of acne, the sebaceous accumulation in the follicles may lead to mistakes, if all the features are not taken into consideration.

Some cases of *superficial nodular syphilids* are very like A. rosacea, but being a tertiary condition, the syphilid is not symmetrical, very likely to ulcerate, more rapid in development, and the border more defined; it varies less with the surrounding conditions, and lacks the telangiectases of A. rosacea, in which also there are no ulcers, crusts, or cicatrices. Evidence of past syphilitic lesions can generally be found elsewhere in the case of a nodular syphilid. The possibility of mixed conditions must, however, always be borne in mind in a chronic disease like A. rosacea, as of course it does not exempt from other eruptions. Thus I have seen iodid acne associated—a puzzling combination suggestive of syphilis. The localization was a guide to the rosacea, and the free suppuration to the iodic eruption.

Prognosis.—Considerable relief can generally be afforded, and often complete removal of the eruption can be effected, with care

* In an express-train engine-driver this law of symmetry was curiously broken through by his occupation. The left side of the face, which was always on the outer side as he stood on the engine, was badly affected, while the right protected side was free from eruption.

and perseverance on the part both of patient and physician, in cases of the first and second degree, but the return of the eruption can only be avoided by the removal of the cause and avoidance of the known conditions which favor the disease. Surgical procedures may also do much for the hypertrophic cases.

Treatment.—The line of internal treatment is determined by the general health. Careful attention to the digestion is of primary importance in most cases; the diet should be regulated; alcohol is generally better avoided entirely, unless in very small quantities in atonic dyspepsia at the beginning of a meal; beer, stout, and effervescing and acid wines are generally particularly injurious; fermentable articles of diet should be avoided, such as sweets, pastry, rich gravies, thick soups, etc., and generally plainly cooked, easily digestible food should be chosen; tea and coffee are often, but not necessarily injurious, and those kinds of cocoa in which the superfluous fat is removed are preferable to the cruder or starchy kinds. Cold winds, or any great alternations of temperature, should also be guarded against. Medicinally, alkalies, or where there is irritative dyspepsia, bismuth and bitter tonics, *e. g.*, gentian, cascarilla, nux vomica (Mixtures, F. 8-12), etc., are the kinds of drugs suitable to most cases, but in atony of the stomach the mineral acids often agree better; if there is a gouty tendency, potash is preferable to soda, and Bulkley speaks highly of acetate of potash in dyspepsia with acidity. Constipation must always be combated by such treatment as is recommended under eczema for that condition. In women, the uterine and catamenial functions should be inquired into; but not infrequently these troubles are secondary to defects in the general health, and subside when these are rectified. On the other hand, the dyspepsia, debility, etc., may be due to the exhausting effects of leucorrhea, menorrhagia, etc. Direct remedies are seldom of much use; arsenic is seldom beneficial, and generally injurious, except in drop doses for drunkard's catarrh of the stomach; ergot is said sometimes to be of service in contracting the dilated vessels, but as these are veins this is very doubtful. Unna claims that ichthyol, in doses of three to five minims, made into a pill and taken three times a day, does all that is required. It certainly suits some cases, but aggravates others, especially where dyspeptic symptoms are prominent, and,

in my opinion, a carefully planned treatment founded on general principles is the most reliable. In rosacea acuminata, however, ichthyol is most efficacious.

Local treatment is of great service in this as well as the other form of acne. The papules and pustules may be treated with sulphur compounds, as in A. vulgaris, the unguent. sulph. hypochloridi (Ointments, F. 19) being one of the best; a five to ten per cent. ichthyol ointment is a favorite with many; or resorcin ℥ss; cremor frigid. or vaselin ℥j may be used, and has the advantage of not being a disagreeable application; or in obstinate cases Vleminckx's solution, 1 part to 4 or 5 of water (Parasiticides, F. 11), applied at night, and in the daytime more soothing applications, such as calamin and bismuth lotion (Lotions, F. 41, 42). For the permanently dilated and varicose vessels the best plan of all, and leaving least mark, is electrolysis, in the same way as that for the removal of superfluous hairs, but a weaker current must be used—three to five cells is sufficient. Of course the cause must be removed or other vessels will enlarge. This has in my hands entirely superseded the older plan of multiple scarification, splitting up the larger vessels, or superficial cauterization with Paquelin's cauteries. Multiple scarification is, however, very valuable in the hypertrophic forms without actual tumors, also in the exceptional cases where innumerable pustules are aggregated together. Europhen or similar microbicides should be rubbed into the incisions. For the red nose due to seborrhea nasi the treatment has been described under that for seborrhea. A modification of scarification is proposed by Lassar for red noses. Forty gilt needle-points are fixed in a disc, and this connected with an electromotor similar to that used by dentists for stopping teeth. By this means hundreds of pricks are made in the skin in a short time with abundant hemorrhage, which can be stopped at will by pressure. It is chiefly useful where there is redness without the presence of visibly dilated vessels, which could be dealt with by electrolysis.

Nodulated noses may be trimmed with a knife down to their normal size; cicatrization takes place readily, and the result is usually very satisfactory. Large tumors must be removed by the usual surgical methods. Veiel recommends cataplasms and painting once daily, with a two per cent. alcoholic solution of

pyrogallic acid for the nodulo-pustular thickened noses, or the application of emplastrum cinereum. Few English patients will submit to these applications, as the method is tedious and increases the disfigurement for the time being.

ACNE VARIOLIFORMIS.*

Synonyms.—Acne frontalis; Acne atrophica (Bulkley and Bazin); Acne necrotica (C. Boeck); Acne rodens (Vidal and Leloir).

Definition.—A pustular folliculitis, which predominates on the upper part of the face and on the scalp, and leaves scars like those of smallpox.

The term "acné varioliforme" was originally given by Bazin to molluscum contagiosum, but acne varioliformis was adopted by Hebra and his followers for the somewhat rare eruption (1 1-2 per 1000) under consideration, in which sense it is now always employed.

Symptoms.—It occurs usually in the center of the forehead, on the sides of the temples, at the margin of the hairy scalp, and on the scalp itself, both at the temples and the vertex; it is seen less frequently on the sides and other parts of the face and neck. In two of my cases it was also on the chest, and in one on the scrotum and on the back. The face, scalp, or both were affected as well in all. In a case of Isaac's shown at the Berlin Dermatological Society, the lesions were on the extremities only, but probably, like Bronson's case, it was really a folliclis.

It consists of indolent, red, flat papules or nodules, about the size of the hemp seed, rather firm at first, but later suppurating at the apex, and drying up into small, flat, closely adherent scabs, which press into the skin, and when they fall off, leave a pit about one-eighth of an inch in diameter (occasionally much larger), at first stained dark red, passing into a brownish hue, and subsequently blanching and looking like a smallpox scar; hence the name varioliformis. They are massed together, but

* *Literature.*—Author's Atlas, Plate LXXXVI., illustrating the disease on the scalp, face, and trunk. Neumann's Atlas, Plate III., shows an eruption disseminated over the whole face, but this is unusual. It is the same case as that published by Pick, which Dubreuilh identified as hidradenitis. *Vide* Acne Agminata.

without definite grouping, in the temples and hair margin of the forehead, while in other parts of the head and trunk they are irregularly disseminated.

The earliest lesion is a convex papule, with minute pin's-point, hard center, apparently cornified epithelium. When a little larger a ring of pus or sero-pus, and outside this a narrow red ring surrounds the horny-looking center, which has also *pari passu* enlarged until it assumes the appearance of a distinct scab. The eruption is painless, but itches slightly at times. It is very chronic, and tends to recur sooner or later, some of my cases having a history of ten years' intermittent duration, and two nearly thirty years.

A milder form occurs in which the lesions are more superficial, from a pin's head to a millet seed in size, and the apex has a small scab, which, when removed, only leaves an excoriation. They may be very numerous over the head and face, but being superficial leave no scars, or only a small transitory one. The larger, more characteristic lesions are sometimes sparsely present as well. Oily seborrhea invariably precedes and accompanies the disease, and according to Sabouraud there can be no acne varioliformis without an oily seborrheic foundation.

Etiology.—It occurs both in men and women generally over thirty, but I have seen it under twenty-five years of age, and one case was said to date from vaccination in infancy, but this is improbable. Its predisposing cause, if Sabouraud is correct, is oily seborrhea. In eighteen cases which I have examined, eight were males, ten females; three had had syphilis, three gonorrhea, and twelve neither. Their ages varied from twenty-one to seventy.

Fordyce suggests on good grounds that, as it is an affection chiefly of the poor, and its localization is on the forehead and scalp, where pressure from dirty head coverings would occur, a microbic infection is probable. How that produces it is now to be detailed.

Pathology.—The first step appears to be a minute horny plug, which sets up inflammation and necrotic destruction, and separation of the portion of the skin affected.

Anatomy.—Microscopic examination of excised papules has been made by Touton, Fordyce, and Sabouraud. Fordyce found that the papules in the early stage were in the derma round the hair follicles; Touton also

found them in the middle and upper part of the corium. The first changes were dense round-celled infiltration round the hair follicles, generally above the sebaceous glands, which might or might not become involved. The infiltration extended laterally and upward, involving the papillary and subpapillary layers, the walls of the follicle, and the epidermis; these finally became disintegrated and destroyed, though the lower part of the follicle and the sebaceous glands often escaped complete destruction.

Fordyce * found enormous numbers of staphylococci in the lymph vessels and free in the tissues. He thought that their number, distribution, and appearance before the lesion had involved the epidermis rendered their etiological relationship very probable. Touton † found staphylococcus, tetracoccus, and a short thick bacillus chiefly in the upper layers of the crust and round the orifices of the hair follicles, and he therefore regards their presence as secondary. In Fordyce's second case, a more advanced lesion, he found no organisms.

Dubreuilh ‡ disputes its pilo-sebaceous origin; the follicles, he says, traverse the lesion, but are not central, and the inflammation extends into the infundibulum, but not beyond it. The suppuration when present is due to the elimination of the necrotic focus, which is cone-shaped, with the base at the surface.

If, however, Sabouraud's § lucid description is correct, all difculties and doubts vanish. He says the first step is the invasion of the follicle by the seborrheic micro-bacillus, and the irritation of the epidermis by their presence in the upper third of the follicle, which produces encystment into a cocoon with concentric horny cells. Thus, then, is the central horny plug produced; as a consequence, there is progressive atrophy of the hair, hypertrophy of the sebaceous gland, and an oily seborrhea. Before acne varioliformis can be produced this lesion must be invaded by the staphylococcus aureus, which gets in by the side of the horny plug, and abundant leukocytes are effused all round and set up an inflammatory edema which clinically is the sero-pustular circle (serous, Sabouraud says). The leukocytes

* Fordyce, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xii. (1894), p. 152.

† Abs. of Touton's paper, *Brit. Jour. Derm.*, vol. iv. (1892), p. 265.

‡ Dubreuilh, *Archives cliniques de Bordeaux*, 1894. *Résumé, Annales de Derm. et de Syph.*, vol. v. (1894), p. 956.

§ "L'Acné Nécrotique," *Annales de Derm.*, vol. x. (1899), p. 841, illustrated; and "Les Maladies Seborrhéiques," p. 86. (Masson et Cie., 1902).

infiltrate the connective tissue till they produce a slough, which is separated in due course.

This makes it all so beautifully clear that it ought to be true. It is strange, however, that, while the conjunction of two such very common organisms is all that is required, yet the disease should be so rare, and that, unlike acne vulgaris, it is very rare amongst the well-to-do.

Diagnosis.—The characteristic features of this eruption are that the lesion is flat with a necrotic, deep-seated scab in the center which leaves varioliform scars, occurs on the temples and forehead, and goes back into the hairy scalp. The last point will distinguish it from all other forms of *acne*, which do not affect the scalp.

It has been confused with *acne agminata*, and its diagnosis is given under that affection.

It is somewhat like the *corymbose papular syphilid*, but this is always a secondary eruption, and widely spread over the rest of the body. A syphilid like A. varioliformis belongs to the late tertiary period, and is rarely seen anywhere except on the head and neck.

Prognosis.—It is almost sure to recur sooner or later.

Treatment.—In my experience the majority of cases improve under iodid of potassium, but some do better with iron; from fifteen to twenty-five minims of the perchlorid should be given three times a day. Improvement soon results, and I have cured cases with this alone, using no local treatment. Prolonged treatment is required for complete removal of the eruption, and if evidence of a syphilitic taint be obtained a mild mercurial course, alternating with the iodid, should be continued for at least a year. In one case, after seven years' duration, the persistent use of iodid of potassium and iron apparently produced a cure, the disease not having recurred during the last ten years. Locally, mild mercurial applications, such as the diluted nitrate or ammoniated mercury ointment, should be frequently smeared on, and this is enough to remove the lesions actually present. Probably, if the horny center of the early papule were removed and iodoform or other antiseptic applied, abortion of the lesion would be induced, and so the scar avoided. Most of the lesions are in an advanced stage before the patient applies for relief. If, however, Sabouraud's views are accepted, then obviously the

seborrhea is the condition to treat in order to avoid recurrences, and internal medicines will be superfluous. (*Vide* Seborrhea.)

Acne Scrofulosorum is a rare affection which occurs chiefly in young children, though Bazin is said to have described a case in a boy of seventeen years. Of this I was unaware when I called attention to the affection, relating three cases at the International Dermatological Congress in Vienna in 1892.* Since then an article has been written by Colcott Fox and several cases have been exhibited at the London and Paris Dermatological Societies. The most characteristic seats are the buttocks and backs of the thighs, but any part of the lower extremities may be attacked, and the extensor aspect, less often the flexor aspect, of the arms and forearms; and the sides of the face in some cases. The trunk, in this form, is seldom involved † higher than the loins. The eruption consists of pin's-head to hemp-seed-sized lesions for the most part, but a few attain to the size of a small pea. They consist of small pustules on a highly inflamed, often livid red base, but the lesion is only moderately firm, not so hard as ordinary acne and evidently seated at the hair follicle. They do not itch.

The eruption comes out in crops a few at a time, the older ones undergoing absorption and leaving purplish stains, but they seldom leave scars, as they are quite superficial for the most part, but occasionally they extend both laterally and vertically and produce deeper ulcerating lesions, as in Galloway's and Hallopeau's cases. On the other hand, a milder form than usual may occur, as in one of my cases, a boy, æt. four, in whom the eruption was a sequela of measles and consisted of pin's-point to pin's-head papules, and only some of the larger ones presented a minute vesiculo-pustular cap. The smaller ones had horny plugs in the center.

Fox and Galloway ‡ examined lesions microscopically, and found no evidence of tubercular structure and no bacilli in guinea-pig and rabbit inoculations. The inference is that it is certainly not directly tuberculous, but may be due either to

* "Acne Scrofulosa," *Rep. of Inter. Cong. Derm. Wien* (1893), p. 510.

† *Brit. Jour. Derm.*, vol. vii. (1895), p. 341, with colored plates; also vol. vii. (1894), p. 294, Jamieson's two cases of impetigo varioliformis, which he admits are acne scrosulosorum.

‡ *Brit. Jour. Derm.*, vol. ix. (1897), p. 273.

tuberculous toxin or to some other toxin favored by the tuberculous predisposition.

In almost all of the cases there is distinct evidence of tuberculous manifestations in the shape of enlarged glands, ulceration of the cornea, etc., together with a family history of phthisis, and the patients are nearly all infants or young children, but a few have been adolescents. A sub-variety of this condition is seen in the more or less abundant acne pustules which appear chiefly on the trunk in some cases of lichen scrofulosorum. Epithelial occlusion of the gland orifices is probably the proximate cause in these cases, and perhaps in the others also.

The treatment is to administer cod-liver oil in full doses with iron and rub in a resorcin or sulphur ointment of about ten grains to the ounce. The eruption responds favorably to these measures, in a short time.

Acne Keratosa.* I have differentiated under this title a rare form of acne, of which I have met with four cases in women, and a fifth case, in a man, of a somewhat different character.

As the case usually presents itself to the observer there are finger-nail-sized, well-defined, excoriated patches covered with hard blood-stained crusts situated on the cheeks and chin, especially near the angles of the mouth. There are also numerous scars of old lesions of the same size and shape as the earlier ones, white to red in color according to their duration. The lesions, as a whole, are symmetrical, taking all the stages together, but they come out singly or in very small numbers at irregular intervals, and are very persistent. They commence as a red, firm, tender lump, on which a pustule usually forms and dries into a scab, or the epidermis is detached by the underlying lymph. The patient removes the scab from an irresistible desire to squeeze or pick out soft or horny, conical-like plugs about a twelfth of an inch long, which are imbedded in the skin, and give rise to great irritation, and sometimes pain and tenderness, until they are removed; sometimes there is only one plug, but there may be several. When they have been extracted the sore heals slowly, the whole process taking from weeks to months, and with a tendency to recur in the same

* *Brit. Jour. Derm.*, vol. xi. (1899), p. 1.

place, if all the horny plugs are not out, and in some instances to spread slightly at the periphery.

More frequently a fresh lesion appears near the old one, generally followed at a varying interval by a corresponding one on the opposite side; thus the disease is kept up for years, in one case forty years, slightly controlled by treatment, but never cured. The horny plugs, which were examined by Jamieson and myself, were about the size of the end of a tin-tack, and composed of epithelial horny cells with a few prickle cells and cell nests. Jamieson compared them to the comedo, and thought they were derived from the sebaceous glands, but it appears to me that they are from the hair follicle itself.

The etiological factors are rather scanty, one case was apparently traceable to the direct effect of exposure to severe cold. The first and the two last cases had probably developed from acne vulgaris. In all of them digestive disturbances were present, and in three they were very prominent. All four cases were women in comfortable circumstances; one was probably a cocain-taker.

The cases differ from the excoriated acne of Brocq,* which is seen sometimes in young girls, and is due, he thinks, entirely to a morbid or hysterical impulse to pick the spots apart from irritation. I think, however, that these cases really itch severely. In one of his cases also the eyebrows were picked out—"Trichoptilimania," as Hallopeau calls it. These excoriations are much smaller than in the disease just described, and there are no horny plugs to remove. I regard it as an acne vulgaris with pruritus, and not as a merely hysterical manifestation. My A. keratosa cases varied from thirty-one to sixty-four years of age, and were all very rebellious to treatment, and had lasted for years. The measures that gave most relief were those directed to improving digestion, and locally mild antiseptics of the iodoform and boric acid class. I think Kaposi's † **Acne urticata** is a somewhat similar affection to the one I am describing, only he has not described the "horny plugs" which characterize A. keratosa, and he speaks of it as attacking the limbs. Like mine, his cases were of long duration—fifteen or

* "L'Acné excoriée des jeunes filles," Brocq (Paris: Charles Schlaeher, 1898).

† Kaposi, Amer. Edit., p. 372.

twenty years, he said. As in my cases, the patients are impelled to scratch or pierce them, and then squeeze them to get temporary relief by getting blood or serum out of them. They begin as pale red, wheal-like, hard elevations from a bean to a shilling in size.

My fifth case in a male is as follows:

Nathan, J., æt. twenty-five, a tailor, first seen in January, 1885, had suffered from an eruption off and on for two years. It was situated about the nose, cheeks, and forehead, the sides and front of the neck, the extensor aspect of the forearm, wrists, hands, and fingers, on the side of the forefinger, on the front and back of the thighs, but there were no lesions below the knees. The distribution was evidently where the hair follicles were most abundant, but also in a few parts where the hair follicles were doubtfully present; three or four lesions at a time came out in various places, but were not grouped.

The eruption consisted of indolent, inflammatory, very firm, conical papules, from one-sixteenth to a quarter of an inch in diameter, in the center of which was a nail-like plug of ordinary epithelium, which left rather a deep hole when picked out; some of these suppurated, forming a small pustule on a conical red base, which only took a day or two to form, but after the pustule was ruptured the inflamed base remained unchanged for weeks. When first formed it was only a pin's-head-sized, slightly red papule with a small horny plug, but both the plug and base increased in diameter, and it was not until the whole was a quarter of an inch in size that suppuration took place, and then only in certain lesions. Each lesion was very slow in its course, but ultimately the induration was absorbed, leaving scarring and pigmentation in some places. Subsequently some of the lesions on the face enlarged to half an inch in diameter, forming much-inflamed, indurated, raised nodules with a flattish top, which softened in the center, almost like a carbuncle, but the central mass was slow in separating. The general health was good; the patient was badly marked with smallpox, but there was no evidence of syphilis, and specific, and, indeed, all other treatment, had no effect on the development or number of the lesions. Some years later I traced him out, and found that he had completely recovered, but not from any special treatment. When first shown to the Dermatological Society, no one except Hutchinson had seen a similar case, which was equally obstinate. Elliot's case was probably one of this kind.

The main differences are the much wider distribution and, for a long period, the formation of lesions round a single plug instead of multiple horny nail-like plugs, and the lesions being more distinctly raised and the plugs obvious, but these differences seem scarcely sufficient to justify one in considering the disease to be distinct from that of the ladies', and it is probably only a variant of it.

The pathology would appear to be that horny cells, derived in all probability from the lining of the hair follicle, are aggregated into a horny peg, which by its presence in the mouth of the follicle acts as an irritant, and an inflammation round it is set up, just as it is round a comedo, but the whole process is much more indolent, and the plugs are multiple instead of single.

Acné sebacée cornée is a French synonym for lichen pilaris or spinulosus. Cases have recently been described by Tenneson * and Hallopeau † as a new affection with horny spicules. Tenneson calls his acné kératique, and considers it different from Hallopeau's acné cornée. From their description I am unable to distinguish any important difference from lichen pilaris.

Acne necrotisans et exulcerans serpiginosa nasi is the lengthy appellation given by Kaposi to a rare affection of which he has observed three cases, two men and one woman, in middle life. I transcribe Kaposi's own words (p. 373 of the American translation of his lectures):

"It occurs as an acute eruption on the tip of the nose, in which flabby papules, as large as a pin's head or a little larger, developed; these rapidly underwent purulent or necrotic degeneration, resulting finally in numerous deep scars. A dense row of new papules running the same course then developed at the margin, and this continued until within a few weeks or months; the cutaneous part of the nose was destroyed by the deep cicatrices. Even after scraping out the papular wall formed by the new eruption around the cicatricial part, relapses still continued, until the process stopped at the level of the bony part of the nose. The curetted tissue proved to be vascular, flabby, granulation masses with numerous giant cells." ‡

There was great resemblance to syphilis pustulosa, except that the papules were very flabby and vascular, while their original size and prominence, their rapid development and destruction, excluded lupus vulgaris.

A very similar condition is recorded by Leslie Roberts § under

* *Jour. Cut. and Gen.-Ur. Dis.*, vol. xii. (1894), p. 362.

† *Ann. de Derm. et de Syph.*, vol. vi. (1895), pp. 285, 305, and 1141.

‡ "Ueber einige ungewöhnliche Formen von Acne," Kaposi, *Archiv f. Derm. u. Syph.*, vol. xxvi (1894), p. 82, with colored plate, repeated in Plate IX. of his Hand Atlas.

§ *Brit. Jour. Derm.*, vol. ix. (1897), p. 179.

folliculitis necrotica, and Wilhelm showed a case at the Vienna Dermatological Society. A similar development of vascular granulation tissue at the follicle followed by necrosis occurred in Lukasiewicz's case * of folliculitis exulcerans, also from Kaposi's clinic, but this was on the nates and limbs of an anemic girl during nearly three years. They occurred in large numbers in patches which extended peripherally from a crown to palm size. Cure was effected by the repeated application of the thermo-cautery. This is perhaps a similar process to the depilating folliculitis of the limbs described by Arnozan in middle-aged and elderly people.

Kaposi gave the name of **Acne telangiectodes** † to a case with non-suppurating spongy vascular papules throughout the face, mingled with ordinary acne. Curetting cured it. It is probably Acne agminata.

ACNE AGMINATA.‡

Synonyms.—Disseminated follicular lupus (Tilbury Fox); Acne telangiectodes (Kaposi); Acnitis (Barthélemy).

This is a still rarer affection than folliclis, and was first described by Tilbury Fox in 1878, from three cases which he regarded as a form of lupus, as will presently be shown. I think it is identical with Barthélemy's acnitis, but not with folliclis. Cases have been shown at the London Dermatological Society by Perry (2), Galloway and myself (2).

Symptoms.—The eruption is for the most part confined to the face, but the limbs may be affected. The most striking feature in a well-marked case is the tendency of the lesions to group about the chin, cheeks below the orbit, the brows, the temples, the upper lip, and the lower eyelids, while there are also scat-

* Reports in *Annales de Derm. et de Syph.*, vol. x. (1898), p. 1065.

† *Loc. cit.* of *Archiv*, and Plates VII. and VIII. of Kaposi's Hand Atlas.

‡ *Literature.*—Tilbury Fox, *Lancet*, July 13 and 20, 1878, pp. 35 and 75. Barthélemy, *Annales de Derm.*, vol ii. (1891), p. 1, with good colored plate, "De l'Acnitis"; as "Acné nodulaire," he had previously described a case in the *Annales* of 1881. Kaposi, Hand Atlas, Plate VII., Acne telangiectodes, an extreme case. Pick, "Acne Frontalis seu Varioliformis," *Archiv f. Derm. u. Syph.*, vol. xxi. (1889), p. 551, colored plate of the face, but it also attacked the backs of the hands and the forearms.

tered lesions on the sides of the face and other parts, and a very few on the nose. In one of my cases it was limited to the eyelids, chiefly the lower. The individual lesions vary from a pin's head to a hemp seed, as a rule, occasionally a little larger. They are mostly of a uniform, dull brownish-red tint, but some of them have a yellow central point, with or without a comedo; in one of my cases there were many with comedones in them, but the great bulk were not connected with the sebaceous glands. A large proportion contained pus even when they appeared to be solid, but in other cases they have been firmer, and nothing but blood came out when they were pressed. In a few instances two or three lesions had coalesced into an oblong nodular patch which had the lupoid aspect which struck Tilbury Fox so much. The general aspect is that of an acne for the large discrete lesions, but the smaller ones are less inflammatory and have a glistening waxy aspect; the grouping also is a distinguishing feature.

In some cases the spots involute with or without suppuration, and leave a small brownish pigmented scar, but as a whole the eruption is very indolent and persistent, quite unaffected by the ordinary acne treatment, and scarcely changes at all except as regards vascularity. Perry's case, however, cleared off rather rapidly when involution once set in, and not, I believe, as the result of treatment.

In neither Fox's, Perry's, nor Galloway's cases were there any lesions in other parts of the body, but in two of my cases there were a few scattered lesions on the forearms; they were pale red, hemp-seed-sized, firm, and more deeply seated than those on the face, and did not suppurate. There were a few papules on the neck, and one on the rim of each ear.

The course appeared to be first the development of a small shotlike lesion under the skin, to be felt but not seen, then slight enlargement, implication, and reddening of the skin, and ultimately it projected above it as already described. There was, however, very little tendency to break down spontaneously and discharge, and form a scab adherent until healing took place, nor could I trace that each lesion completed its course in two to six weeks, as Barthélemy describes in acnitis, but if the lesion disappeared spontaneously or by treatment, a pigmented depression was left. In other respects the disease closely cor-

responded with acnitis, and the distribution was very like Fig. 1 of his 1891 paper, only the lesions were more distinctly in crowded groups. If I am right in considering that the resemblances outweigh the differences, and identifying this disease with acnitis, I think, as far as my experience goes, Barthélemy is right in keeping it separate from folliclis. For the diagnosis from this, see Folliclis. In two of my cases there was no evi-

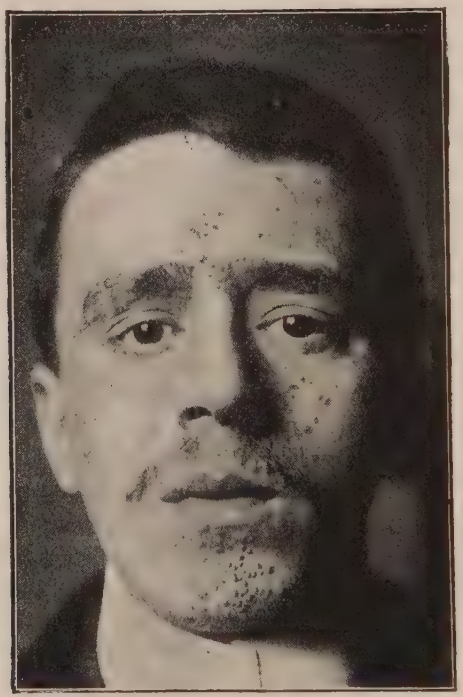


Fig. 70.—Acne agminata.

dence of tuberculosis either in the patient or his family, but in a third the family history was very bad.

Pathology.—Tilbury Fox * regarded the dense cell infiltration throughout the corium permeating between the fibers, very thick in the papillary layer and round the hair follicle, and partly in the sebaceous glands, as a proof of its lupus character. Bar-

* The microscopic drawing illustrating his paper was taken from sections made by myself from a papule excised from above the upper lip, and at the time I regarded the lesion as of an adenoid structure.

thélemy considers the affection the result of auto-intoxication from intestinal absorption, and thinks dilatation of the stomach is a frequent concomitant.

Darier found in one of Barthélemy's cases epithelioid and giant cells localized round the pilo-sebaceous follicles. Barthélemy himself found all the constituent elements of the skin involved, and could not determine any point of departure from any one of them. The fact that the mucous membrane of the mouth may be involved negatives the sweat coils as the only point of departure.

Galloway examined a nodule from the eyelid of one of my cases, and found abundant giant cells, and a general aspect of tubercular structure, but no tubercle bacilli were discovered.

Pernet * examined a nodule from the cheek of the case of Fig. 70, and found that the primary and chief change occurred about the sweat coils, which were disorganized by an inflammatory leukocytic infiltration. Some of the hair follicles were partially involved, and there was perivascular infiltration. No tubercle bacilli were found.

The treatment is given under "Folliclis."

FOLLICLIS (Barthélemy). †

Synonyms.—Lupus Erythémateux disséminé (Boeck); Folliculites disséminées symétriques des parties glabres à tendance cicatricielle (Brocq); Acne varioliformis of the extremities (Bronson); Folliculitis exulcerans (Lukasiewicz); Hidradenitis destruens suppurativa (Pollitzer); Idrosadénite suppurative disséminée (Dubreuilh); Scrofulides nodulaires disséminées (Dubreuilh's Handbook); Spiradenitis suppurativa disseminata (Unna); Tuberculides (Darier); Granulome innominé (Tenneson); Folliculites tuberculeuses (Kracht); Tuberculides acnéiformes et nécrotiques (Hallopeau, Balzer, and Leroy); Toxi-tuberculides papulo-nécrotiques (Hallopeau's latest).

Hutchinson was the first, as Boeck has shown, to differentiate this rare affection, and point out its frequent association

* *Brit. Jour. Derm.*, vol. xiv. (1902), p. 131. The clinical account is at p. 18 of the same volume.

† *Illustrated* by Barthélemy, "De l'Acnitis," *Annales de Derm.*, vol.

with lupus erythematosus. Then came Boeck, Brocq, and Barthélemy, and the rest, each describing independently and christening the supposed new affection according to his view of its pathology.

I have chosen the name "folliclis," given by Barthélemy, on account of its brevity, and as merely a clinical label which does not assume much as to the nature of the disease. The other names are too long for ordinary use, and too dependent on doubtful pathological theories.

It is a disputed point as to whether folliclis and acnitis (*vide* Acne Agminata) are different affections or only phases of the same disease, Barthélemy holding that they are separate, while most of his French colleagues consider them to be identical. Provisionally I keep them apart in the description, as folliclis more often occurs without acnitis than with it. The eruption attacks the limbs, especially the forearms and legs, hands and feet, the head and face being quite exempt except the ears, and the trunk being free in most cases, and is rarely much affected. The lesions are discrete and never grouped, says Barthélemy, but Hallopeau and others say they may form extensive but irregular patches, and while the back of the hands and sides of the fingers are frequently, and sometimes exclusively affected, the palms are seldom attacked (*vide* Dubreuilh's case); but I have seen it on the palmar side of the finger-tips. Each lesion is very constant in its characters, commences as a red point, then develops into a small papule which becomes vesicular, and forms a white apex to the papule, which is then easily felt in the skin, and goes on to a small almost painless nodule containing pus, which may form a ring round a horny center and have a red areola. When it bursts very little pus escapes, as most of it dries into a crust, which falls after five or six

ii. (1891), p. 1.; colored Plate I., Fig. 3, represents elbow. Hallopeau and Leredde, Plate XII., p. 521; a good representation about foot and ankle. Good photographs: Bronson, "Acne Varioliformis of Limbs," *Amer. Jour. Cut. Dis.*, vol. ix. (1891), p. 121. of forearms and back of hand, and microphotographs by Fordyce. Duhreuilh, "Hydrosadénites suppuratives disséminées," *Arch. de Méd. expérimentale*, January 1, 1893. palms. C. Boeck, "Die Exantheme der Tuberculose," *Arch. f. Derm.*, vol. xlii. (1897), pp. 7 and 175, gives complete history and references. "Dermatitis nodularis necrotica." Török, *Archiv f. Derm. u. Syph.*, 1901, vol. lviii., p. 337.

days, and leaves a cicatrix, first red, then pigmented, and finally white, from a millet to a lentil in size, seldom larger. The ear rims are irregularly cicatricial, and are very liable to chilblains. Its course is very indolent, as a whole, but individually each lesion takes from four to six weeks, but sometimes it is more active. One of Barthélemy's cases had had it for ten years in crops, beginning in the lower limbs, and was never quite free, but was worse in summer, and it was aggravated by vapor baths. His forearms and legs were riddled with cicatrices.

On the fingers, as I have seen it, the nodules are very hard and indolent, and form pus round a central hard point, and leave a small hole in the hard elevation which does not soften as it does elsewhere. I have also seen what was probably the same disease as a widespread superficial eruption, apparently sweat, follicular on the limbs and back, where it was abundant, but not much on the front of the trunk; the hands and feet were free, and there was one spot on the face. The patient, a male, æt. twenty-three, had acute phthisis. Bureau also describes a superficial form which he considered pilo-sebaceous.

Etiology.—Most cases occur in persons with a weak circulation, and the cases I have described as "acrodermatitis pustulosa hiemalis"* probably belong to folliclis, but three cases by Barthélemy and others have been worse in the summer; nevertheless cold is an important factor, as a rule. I have three times seen it on the hands only, along with lupus erythematosus, an association noticed by Hutchinson, Boeck, Hallopeau, etc. In a large proportion there has been evidence of tuberculosis in the patient or the family. In one of my patients the lupus erythematosus on the face was multiple and symmetrical and much crusted, but in many respects had the aspect of a lupus vulgaris; she had enlarged glands and other evidence of tubercle.

Pathology.—There has been as much dispute about this as about the clinical and nosological aspects of the affection. Several observers, as Pollitzer, Giovannini, Dubreuilh, Fordyce, Unna, etc., have laid stress on the involvement of the sweat glands, and considered it as hidrosadenitis, and Fordyce seems to have traced the process from the subcutaneous nodule upwards; but Leredde and Bureau regard it as a granuloma of

* "A Clinical Study of some Winter and Summer Eruptions," *Brit. Jour. Derm.*, vol. xii. (1900), p. 39.

tuberculous origin, and consider the sweat-coil lesions as secondary. Darier also considers it to be a tuberculid. Leredde * says giant and epithelioid cells are frequent, but not constant. Török says it begins as an endophlebitis. No tubercle bacilli have been found, hence Hallopeau assumes it to be of toxin tuberculous origin; but though this is plausible for many cases, it is unproved, and the true pathology has yet to be demonstrated.

Diagnosis.—The characteristic features are the succession of indolent, almost painless, nodules, with suppuration usually round a central hard core, leaving a small pigmented pit, and attacking the limbs chiefly, and occurring frequently in subjects tuberculous in themselves or relatives, and sometimes associated with lupus erythematosus. The supposed distinctions from acne agminata are as follows:

In acne agminata the seat of predilection is the face, although the limbs may be affected. In folliclis the seat of predilection is the limbs, and although it may affect other parts, the face and head except the ears are exempt. While acne agminata may group on the face, it is scattered on the limbs, but folliclis may be in irregular groups and sometimes very crowded ones.

Acne agminata begins as a subcutaneous shotlike nodule (which may be shelled out if an incision is made over it), and works towards the surface, suppurates freely, and breaks down and leaves a scar, and both lesion and scar are larger than folliclis. In the latter the initial lesion is dermic, though deep in it where it forms a flattened papule, which becomes vesicular or pustular and often umbilicated, and never suppurates freely, and cannot be enucleated at an early stage. Folliclis lesions predominate on the buttocks, elbows, and knees. The process of each lesion and the disease as a whole is much more acute in acne agminata than in folliclis. The affection is not in any way connected with tuberculosis, either in the patient or family history, while it is so in folliclis. Dubreuilh and others do not admit all these distinctions, but think the cases merge into each other.

Treatment.—Before suppuration apply a mercurial plaster,

* "Sur un Granulome Innominé," by Tenneson, Leredde, and Martinet, *Annales de Derm.*, vol. vii. (1896), p. 913.

such as the mercury and carbolic paraplast No. 255 of Beiersdorf, or Vidal's red plaster; and it might also be used if there is induration left after the evacuation of the pus. When suppuration has occurred remove the central core, if any, and syringe out with 1 in 40 carbolic solution or perchlorid of mercury 1 in 5000, and fill up the hole with iodoform.

If there is tuberculosis in any overt form, cod-liver oil and other treatment appropriate to the constitutional condition may be given. In the winter cases, to which I have alluded, improving the peripheral circulation, giving five grains of thiol in pill or cachet three times a day and rubbing in vasogen iodin ten per cent. appeared to be quite successful. In acne agminata Besnier found great benefit from giving salol internally, which corroborates Barthélemy's intestinal intoxication theory.

C.—DISEASES OF THE HAIR FOLLICLES.

Diseases of the hair are dependent upon pathological changes in the follicle, similar to those of other parts of the skin. They comprise "inflammation" (sycosis or folliculitis); "trophic" changes, leading to "overgrowth" (hirsuties), or to "atrophy," producing loss of elasticity (fragilitas, trichorrhexis nodosa, moniliform hair, etc.); to "color" defects (canities, etc.); or if the damage is so severe as to lead to "falling out" of the hair (alopecia in various forms). Then, as pathological accidents, so to speak, there are "concretions" on the hair (lepothrix, piedra), and "vegetable parasites" (favus, tinea tricophytina). These last are treated of in the section on Hyphomycetic Diseases.

CONCRETIONS ON THE HAIR.

LEPOTHRIX.

Synonyms.—Trichomycosis nodosa (Patteson); Trichomycosis palmellina (Pick).

Deriv.—λεπίς, scale, and θρίξ, the hair.

This affection was first described by Paxton of Chichester in 1869, and then by E. Wilson, who gave it its name. Pick of Prague, unaware of its having been long known in England, de-

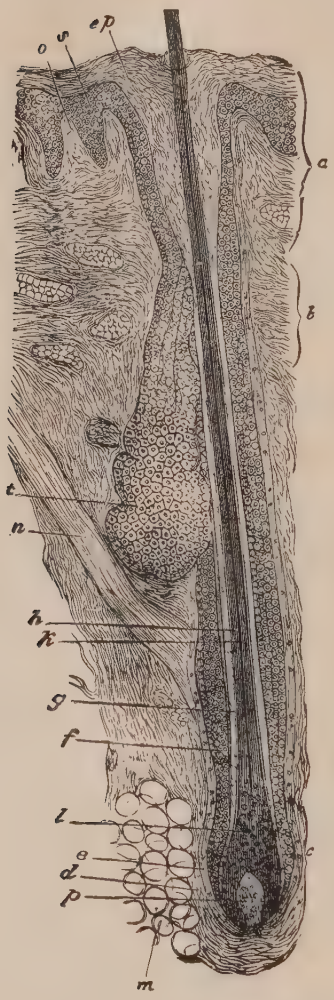


Fig. 71.—Normal Hair of the Beard (Biesiadecki).

a, excretory duct; *b*, neck of the follicle; *c*, dilatation of the hair follicle; *d*, external sheath of the hair follicle; *e*, internal sheath of the hair follicle; *p*, papilla; *f*, external root sheath; *g*, internal root sheath; *h*, cortical substance; *k*, medullary substance of the hair shaft; *l*, root of the hair; *n*, arrector pili; *t*, sebaceous gland; *o*, papillæ of the skin; *s*, rete mucosum; *ep*, epidermis, which is continued into the excretory duct of the hair follicle.

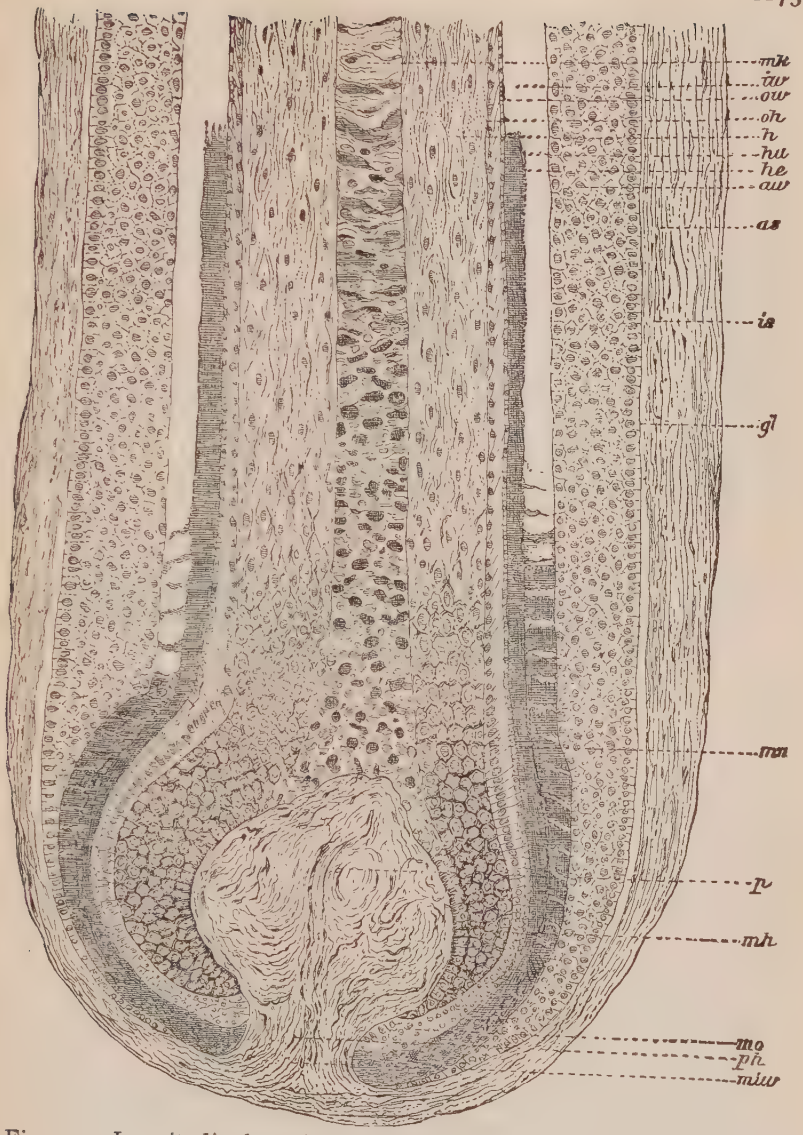


Fig. 72.—Longitudinal section of the root of a Normal Hair from the beard (Unna).

as, external root sheath of the follicle; *is*, internal sheath of the follicle; *gl*, vitreous membrane of the follicle; *aw*, external root sheath (prickle layer of the follicle); *iw*, internal root sheath; *he*, sheath of Henle; *hu*, sheath of Huxley; *ow*, cuticle of the root sheath; *oh*, cuticle of the hair; *h*, cortex of the hair; *mk*, medulla of the hair; *p*, papilla; *miw*, *mo*, *mh*, *mm*, matrices of *iw*, *ow*, *oh*, *h*, *mk*; *ph*, neck of the papilla.

scribed it independently long afterwards, and many of his German *confrères* claim priority for him.

The condition is very common; but as it rarely gives any trouble (though in one of my cases it was associated with intense itching), it is usually overlooked.

Symptoms.—The hairs either of the axillæ or scrotum, where it is in contact with the thigh, are the only regions where it has been observed; and since both these positions are characterized by warmth and moisture, these conditions are probably essential to its production. In the most marked cases the hairs are brittle, and generally break off if an attempt is made to pull them out. On holding a hair just removed up to the light the borders are irregular and ragged, and it looks dull and lusterless, like a piece of wet string. On placing a hair under the microscope, nearly all along the shaft, but generally with some

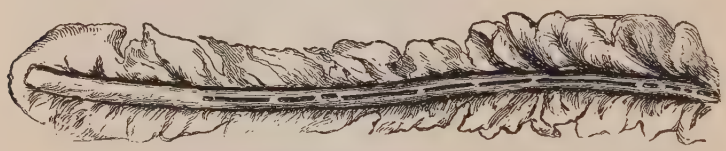


Fig. 73.—Hair of scrotum affected with lepothrix for nearly its whole length. × 100.

intervals of healthy hair, and occupying the whole or part of the circumference, is an irregular lobed concretion, and the divisions being directed upwards it closely resembles the feather end of an arrow (Fig. 73). When the condition is slightly developed it consists of circular, well-defined masses, lying on, but not encompassing, the shaft, and often three times its diameter. Embedded in these masses are some of the fibers of the cortex, which have been separated at one end by the concretion (Fig. 72). In some places the fibers of the whole shaft are split up, and the hair may break off with a brushlike termination embedded in the masses, or the fracture may be a clean one. In the axillæ the concretions are often of a red color, due to a micrococcus (see Red Sweat).

The change is mainly a surface one, and the concretion is very resistant both to strong acids and caustic alkalies, ether and chloroform. With a high power the structure seems to consist of minute round masses.

Patteson * has shown that by staining with aniline violet, and decolorizing by Gram's method, a short bacillus can be demonstrated, which penetrates under the cortical scales, and as it is constant, it is probably the cause of the affection. Payne † had previously found bacilli in this disease. Eisner from cultures describes it as a diplococcus inclosed in a capsule, and that another diplococcus is inclosed with it in a second common envelope. Sonnenberg confirms this. Columbini also found cocci from which he cultivated diplococci and short chains or aggregations. An organism has also been found in relation to the red sweat of the axilla so often associated with this condition of hair by Babes, Pick, Balzer, and Barthélemy, who regarded the bacterium of that disease as the bacterium prodigiosum; but in hairs from the scrotum the same condition occurs without the red color. In one case I excised a piece of the scrotum, but microscopical examination of the hair roots revealed nothing abnormal.

Treatment was not very successful. Shaving and various ap-

Fig. 74.—Hair of axilla affected with lepothrix in nodules. × 100.

plications were tried; and as most of my patients were in the medical profession, the treatment was well carried out. In future cases I shall try shaving and sponging the axillæ with 1 in 1000 bichlorid of mercury solution, with a view of preventing the development of organisms in the sweat.

Piedra ‡ (Spanish for a stone). The disease is almost confined to the hair of the head of native women who live in the valleys of Cauca, in Columbia; in rare instances it affects the hair of the head and beard in males. It consists of pin's-head-sized nodules, to the number of from one to ten, situated on the

* *Trans. Royal Academy of Ireland;* and Reprint, J. Falconer, Dublin, 1889. He suggests the name "trichomycosis nodosa," but this has already been proposed for "piedra," and it is better to stick to the recognized term "lepothrix," even if its pathological signification is erroneous.

† *St. Thomas' Hospital Reports*, vol. xvi. p. 268.

‡ Malcolm Morris, *Path. Trans.*, vol xxx. (1879), p. 441, with plate.

surface of the hair shaft, and beginning about half an inch from the root, either on one side or surrounding it.

The nodules are black, intensely hard, and rattle when the hair is combed; and, according to both Desenne * and Morris, consist of closely aggregated sporelike bodies due to fungous growths. More recently Juhel-Rénoy,† by his preparations and cultivations, has clearly shown that the organism is a fungus, with spores and mycelium.

Its origin is unknown, but in Columbia it is supposed to be due to the women washing their hair with a mucilaginous fluid, like linseed oil.

Juhel-Rénoy, as a result of experiments in cultivation, suggests as a treatment repeated sponging with 1 in 1000 solution of corrosive sublimate used as hot as possible, petroleum ether being a useful adjunct.

Piedra Nostras. See Tinea Nodosa.

Chignon Fungus.‡ Beigel describes this as occurring as oval or roundish masses surrounding the hair shaft at irregular intervals. It was due to a fungus, which Hallier regarded as a species of sclerotium, calling it sclerotium Beigelanum. Behrend § is of opinion that it is identical with piedra. Beigel also describes another nodular disease of the hair of the head, due, he thinks, to a disease of the hair sac, the nodules being composed of compressed cells, like those of the inner root sheath. (See "Hair-eaters.")

Tinea Nodosa, Piedra Nostras (Unna), is a name given by Morris and Cheadle to a case of nodular growth on the hair

* *Lancet*, vol. ii. (1878), p. 165, is an abstract of Desenne's paper, read before the Académie des Sciences. In the same volume is much correspondence on the subject, in which the disease is erroneously mixed up with trichorrhexis nodosa.

† *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 777, and vol. i. (1890), p. 766, illustrated. Juhel-Rénoy wishes to rechristen it "trichomycose nodulaire," the same name that Patteson unwittingly proposed for lepothrix.

‡ Beigel, "Diseases of the Hair," p. 111; also Tilbury Fox, "A New Fungus," *Jour. Cut. Med.*, vol. i. (1867), p. 175.

§ G. Behrend, "Ueber Trichomycosis nodosa (Juhel-Rénoy)," *Berlin klin. Wochensch.*, 1890, No. 21. Full abstract in *Ann. de Derm. et de Syph.*, vol. i. (1890), p. 829.

of the whiskers and beard of a young man. An instance of it came under my notice in which it affected the left side of the mustache of a medical man, who complained that the hairs, if twisted up, stuck together. On examination the hairs were found to be ensheathed in a concretion, which made the outline of the hair irregular, and was dark brown, dull, and opaque; it began some little distance from the root, which was quite healthy, and destroyed the elasticity of the hair, making some of them break off short, and others split. Under the microscope the nodules were seen for the most part simply to ensheath the hair; but in some hairs the growth had evidently penetrated below the surface, and where the hair was split, to inclose each portion. When disintegrated and viewed with a higher power the concretion was seen to be composed of fungus spores, somewhat smaller than those of tinea tonsurans, as in Cheadle's case. In a case of mine Pernet found that the spores were in rows at right angles to the shaft of the hair, and looking

Fig. 75.—Tinea nodosa from mustache.

A. With low power, showing incrustation on the shaft of the hair.
B. Small portion of incrustation with higher power. × about 300.

like segmented mycelium bound together by a cement secreted by the fungus. Possibly Thin's * case of parasitic affection of the mustache is the same disease; Behrend† and Unna ‡ seem to have each met with a case, and Giovannini § also, or an

* *Lancet*, vol. i. (1879), p. 190, with woodcut.
† *Lancet*, November 4, 1882.
‡ *Loc. cit.*, French Abstr., p. 830.
§ *Viertelj f. de Derm. u. Syph.*, 1887.

analogous condition. Trachsler investigated Behrend's and Unna's cases and found minute differences in the cultivation of the fungi. Shaving or clipping close for some time is the only remedy.

Epithelial fragments, probably portions of the internal root sheath, sometimes adhere to the shaft of the hair as it grows up, and look like concretions. J. C. White of Boston informs me that it is common in America in association with alopecia furfuracea, and is erroneously thought to be the cause of the loss of hair; hence the popular name of **"hair-eaters."** A very high degree of it is often produced when chrysarobin ointment is employed on the scalp; a conical concretion grows up with the hair, and at first sight looks like a nit, but the hair is in

Fig. 76.—Portion of internal root sheath adherent to shaft—the so-called "hair-eater."

the center of the concretion. An extreme case resulting in permanent destruction of the hair is described by Grindon.*

Plica, which may be defined as entangling of the hair, occupied at one time a comparatively important place in works on skin diseases, and Alibert † devotes five plates to depicting various forms of it, and gives elaborate descriptions of the condition; but since the mysterious plica polonica was proved to be nothing more than the product of neglect and the matting due to inflammatory exudation, excited by innumerable pediculi, agglutinating the hair together, the term is scarcely mentioned in dermatological works. There appears, however, to be a rare form, which seems entitled to the name of **neuropathic plica.** Six cases are all that I know of, one reported by J. F. Le Page,‡ another by Wilson in relating Le Page's case, and one by Stelwagon, and another in a Hindoo by D. B. Pestonji.§ Le Page's and Pestonji's cases occurred in young women, and in both it came on after washing the hair in warm water, one

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xv. (1897), p. 256.

† Alibert's Atlas, 1st ed., Plates VI. to X.

‡ *Brit. Med. Jour.*, January 26, 1884, p. 160. His specimen is in the College of Surgeons Museum, No. 374, with observations by Wilson.

§ *Lancet*, September 3, 1885.

in a few minutes and the other after two hours. The hair was drawn up into a hard, tangled lump impossible to unravel, limited to the right side in Le Page's patient, who had very long hair, and in Pestonji's case to the back of the head, where on each side was an elongated mass very hard and firm, like a rope, and about the size of the fist. There was no reason to believe that it was an imposture, and the Hindoo woman cut the lumps off herself and then threw them away. Le Page found the most contracted hairs flattened. Stelwagon's * case of plica, in a woman, occupied a dollar-sized area above the nape, grew to four feet long in twelve years, but its mode of onset was unknown.

Ohmann-Dumesnil † has met with a similar case in a girl of sixteen, following a chill during the catamenia. There was a rise of temperature, and two days after it fell matting commenced, and was established in ten days, and formed a plica ten inches in length and one inch in thickness. The right cornea also sloughed and destroyed vision. The outline of the hair was irregular, and the hair was brittle, as in trichorrhexis. In a case of Dubreuilh,‡ a pronounced hysteric, the distal half of the hair became like a negro's, but did not mat, and in a few weeks became normal again. A slight degree of matting occurred in another case of his.

HIRSUTIES.§

Deriv.—Hirsutus, hairy.

Synonyms.—Hypertrichiasis; Hypertrichosis; Polytrichia; Trichauxis; Hypertrophy of the hair.

Hairs may be increased in number or in size, either as regards length or thickness, and may grow in either normal or abnormal positions. In normal positions there may be excess

* *Amer. Jour. Med. Sci.*, December, 1892.

† *Internat. Med. Mag.*, July. 1893, and abs. *Brit. Jour. Derm.*, vol. v. (1893), p. 383.

‡ Dubreuilh, *Annales de Derm.*, vol. iii. (1902), p. 368.

§ *Literature.*—Wilson's "Lectures on Dermatology," 1878; Beigel, "On the Human Hair" (Renshaw, 1869), who records fully most of the above cases and many others, with woodcuts; Leonard, (Detroit, 1880). See

in length and quantity on the heads of both sexes, and in the beard in man. Thus Beigel relates that in Negreni, a once celebrated dancer, after an acute illness, the hair grew to over nine feet long; while at Edam is the portrait of a man whose beard was nine feet long, and Leonard mentions one of seven feet. Similar excessive growth may also be seen in the eyebrows, inside the nose, ears, axillæ, and pubes. Then the natural down or almost imperceptible hair may grow excessively into a sort of fur, and universal hirsuties be produced. One of the most remarkable instances was in the oft-quoted Burmese Shwe-Maon and his family, where, through three generations, this excessive hairiness was observed, absolutely all over the body, except the palms and soles. There was also the Russian Andrian Jewtichjew and his son Feodor, figured in Ziemssen, and the Mexican hairy family of Ambras. Another Burmese instance was lately on show in this country, a male child called Krao.

In abnormal positions we see it occasionally in women and children, who have mustaches, beards, whiskers, etc. Some of the best examples of bearded women are those of Julia Pastrana, the Spanish dancer, whose whole body was also hairy (her child developed a similar condition); that of Barbara Urster, who lived in the sixteenth century, and had a beard down to her girdle; and the woman in Barnum's show who has a fine beard, mustache, and whiskers. These examples of hirsuties are selected on account of their being specially developed; but many cases approaching them in degree as well as in kind are to be found in the authors already quoted, and elsewhere.

In some cases two or three hairs grow from one follicle. Coarse, and even long hairs, in connection with moles, have already been described **(Nævus pilosus).**

The hair does not always grow in a normal direction. Thus in Martinez del Salper the direction of the hair on the back was upward. This occurs sometimes in the eyelashes, exciting much irritation in the eye **(trichiasis)**, in the eyebrows, and elsewhere. In the extreme hirsute cases dental defects, usually

portraits by Beigel, also in Hebra's Atlas, Lief. ix., Taf. 7 and 8; Memoir by Bartel in *Zeitschrift für Ethnologie*, 1879; Geyl, "Hypertrichose." (Hamburg, 1880).

in the form of deficiency, seldom of excess, are present, as a rule.

Etiology.—Racial peculiarities account for a certain number of cases. Thus the Burmese already mentioned, and the Ainos of the Island of Yezo are noted examples, though there has been gross exaggeration with regard to them. Unna suggests that the excess is really the result of defective development. Dark people are more liable to it than fair. Family predisposition is also a factor. Some cases are congenital, some occur later—in childhood, puberty, or in the decline of life. The association of congenital lumbar hypertrichosis, club-foot, and perforating ulcer with concealed spina bifida was first pointed out by Virchow, and since by Von Recklinghausen, Sutton,* and others. In cases published by Atgier, one brother had lumbar hypertrichosis, while the other had it between the shoulders; in each the tuft was very long. Hirsuties occurs in mannish women, and also in disorder or irritation of the genital organs or during the abeyance of sexual functions; and is often seen in insane women. Both in women and children it has been observed in association with cancer of the supra-renal capsule.† Again, it is seen in some women at puberty, during pregnancy, in amenorrhea, or in sterile women; but in by far the majority it occurs at the climacteric period and onwards. It is by no means necessarily indicative of bodily vigor, even in men. Many cases of excessive growth in normal positions have come on after severe illnesses, and although it is common to see moderate excess in strong men, some of the most notable instances have been the very reverse. It follows local irritation sometimes, coarse hairs developing on the site of a blister, after using sulphur ointment, mercurial applications, etc.

Prognosis.—As a rule the growth is permanent, but in a few cases, where it is due to a temporary cause—pregnancy, defective health, poulticing, etc.—it has fallen off or become lanugo-like again.

*Sutton on "Spina Bifida Occulta, and its Relation to Ulcus Perforans and Pes Varus," *Lancet*, July 2, 1887, p. 5.

†No. 3578 E, Museum of Coll. Surg., is "primary carcinoma of the adrenal," which was in life associated with abundant development of hair on the face and extremities in a woman, æt. thirty-two.

Treatment.—Means for the permanent removal of superfluous hair can only be adopted with success when the increase or development is moderate, such as is present in many women on the chin, etc.

The only effectual treatment is that of electrolysis, first used by Michel of St. Louis and Benson of Dublin (for trichiasis), and afterwards by Hardaway, Piffard, and other American physicians. From extensive experience I can speak most highly of this treatment, though it is unfortunately very tedious, both for patient and operator.

The mode of procedure is as follows: The patient being placed opposite a good light, with the head resting in a comfortable position, and the superfluous hair having been cut to about one-eighth of an inch long, a fine needle, connected by means of a suitable holder with the *negative* pole of a galvanic battery, is introduced down to the bottom of the hair follicle by keeping the needle parallel with the direction of the hair. The circuit is then completed by the patient grasping the positive pole tightly. Bubbles of froth are immediately perceived, and after a few seconds the patient releases her hold of the positive pole. The needle is withdrawn, and an attempt is made to withdraw the hair by forceps, but without any forcible traction. If the hair is not perfectly loose the needle must be introduced again. About six to ten cells of almost any twenty-cell battery are usually sufficient, but the number will vary according to the strength of the battery. It is advisable to have an arrangement for easily altering the number of cells, and an absolute galvanometer to measure the strength of the current, which varies greatly, even at the same sitting: from three to five milliampères are sufficient. The only way to secure uniformity in the strength of the current is to have more cells in use than are necessary for the current required, and then to reduce it by means of a rheostat. The strength of the current is also affected by the moisture of the skin and electrode, and the closeness with which it is grasped or otherwise applied.

If the needle is of steel it should be as fine as possible. Mine are No. 16, which I prefer either to a gold needle with iridium tip or to the irido-platinum one recommended by Hardaway. These soft metal needles are supposed to feel their way, so to speak, into the follicle, while the steel ones, being sharp and

rigid, easily pierce and go outside of it. The objection to the steel needle is, I think, more theoretical than practical. G. H. Fox recommends the finest jeweler's broach, ground so that it has a smooth bulbous point. From twenty to thirty hairs may be removed at a sitting, depending upon the skill of the operator and upon the hairs being coarse or fine. A lens may be required to find the orifice of the follicle, and it is convenient to have a watchmaker's lens set in a spectacle frame, a four-inch lens in a cork mount being the most suitable. The best possible electrode for a patient to grasp is a carbon cylinder, covered with chamois leather, wetted with salt and water, and mounted on a handle. I have also found it advantageous to have a small pair of forceps attached to the handle of the needle holder, as it saves time and prevents the forceps being dropped or mislaid (Fig. 77). It is less painful to the patient if she is not holding the positive pole when the needle is introduced or withdrawn, as otherwise a sharp prick is felt. The operation is decidedly uncomfortable, being attended with a sense of burning, but few patients consider it seriously painful, and none

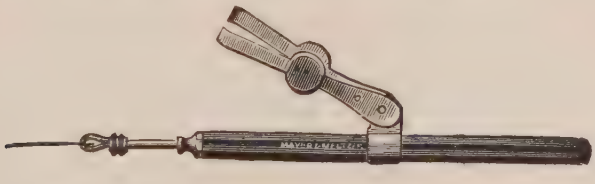


Fig. 77.—Needle holder, with forceps attached, for removing hairs by electrolysis. In use the forceps should be turned backward instead of forwards, as in the woodcut, otherwise the patient may get an accidental scratch with the needle.

unbearable. In no case should the needle be attached to the positive pole. It is less effectual, and with steel needles blackens the skin. In very sensitive patients I have had rubbed in, just before the operation, a twenty per cent. ointment of cocain and lanolin, and I have also injected cocain hypodermically, but the after-pain is only slightly mitigated by external use, and hypodermic injections are sometimes dangerous. Morton of New York recommends that a solution of six grains of cocain in a dram of guaiacol should be introduced into the skin by electrical osmosis. According to Lewis Jones, anesthesia can be produced in four or five minutes if a little of this

solution be applied to the skin by means of blotting paper, and on this a flat metal disc is placed, attached to the positive pole of the battery, and the current turned on until it reaches four milliampères for a half-inch electrode. Begin with ten or fifteen cells and reduce the number as the resistance diminishes. A slight irritation of the skin is produced if it is applied for too long a time. This form of anesthesia would only be necessary for a very sensitive patient. After the operation, a small red papule is left at the site of removal, which soon flattens down to a red spot; and this, after a time, whitens down to a minute scar, only perceptible when carefully looked for. Hairs that are very close together should be removed at separate sittings, and it is usually advisable to wait a week between each time. Bathing the part operated on with warm water relieves the discomfort, and calamin lotion helps to conceal the redness, etc., until it has had time to subside. As a rule, the coarser hairs are alone fitted for operation; for lanugo growth the remedy is worse than the disease. The process is very successful for small hairy moles, but a stronger current is necessary to completely destroy the growth.

Owing to the theoretical simplicity of the operation it has largely been undertaken by ignorant and unqualified persons, and their unskillful manipulations have brought the procedure into some disrepute, both as regards efficiency and the resulting disfigurement. A good deal of practice is required to get the best results obtainable, but, granted the necessary skill, the operation is thoroughly satisfactory as regards the permanency of the removal, and there will be no marks left with the finer hairs, and even with coarse hairs the scars left ought to be so small as to be quite insignificant when sufficient time has elapsed for them to be quite white.

It should be explained to the patient that a certain number, varying with the coarseness, position of the growth, and the skill of the operator, will require a second operation, owing to the hair papilla or its root sheaths being imperfectly destroyed. This is unavoidable to some extent, as the aim is not to use a stronger current, nor for a longer time, than is absolutely necessary; moreover, the direction of the root in some positions, *e. g.*, in the neck, is not always in a line with the external portion of the hair, and so the root may be missed.

Finally, in a very small number of cases, disappointment is met with, because some of the lanugo hairs become coarse after the removal of their stouter fellows. Perseverance will overcome all these difficulties. Unnecessarily large scars result, and occasionally keloid, from too strong a current, from its being too long continued in each follicle, from too coarse a needle being employed, from removing hairs which grow close together at one sitting, or from the sittings being repeated at too short intervals; or when epilation has been practiced by the patients for a long time, so that they grow erratically as regards direction of the root shaft, and the needle has to be introduced several times.

The Röntgen rays have recently been strongly recommended by Schiff and Freund and Jutassy and others for the removal of superfluous hairs, hairy moles, etc. Their action is powerful in proportion to the intensity of the light, its proximity to the skin, and the duration of the exposure. As is now well known, prolonged and repeated exposures are liable to set up a severe dermatitis with ulceration most difficult to heal, and with more or less permanent damage to the nerve terminations. To avoid these evil consequences, which on a lady's face would never be forgiven, Schiff and Freund recommend that the current should not exceed two ampères, the maximum tension being eleven and a half volts, the spark length of the lamp not less than six inches, and the negative button placed eight to ten inches from the skin, with an exposure not exceeding ten minutes if the jet interrupter is employed. From ten to thirty sittings are usually required, the effect being cumulative; the coarser the hair the longer and stronger must be the exposure. In some cases a brown discoloration of the skin is produced, which disappears three or four days after the hair comes out. In several dark-haired people the hair became snow-white before it fell out. In some of Jutassy's cases no regrowth had occurred a year after the operation.

Although this sounds all very simple the reader is warned not to undertake to remove superfluous hair from the face before he has had experience in handling the Röntgen-ray apparatus, and has tried it on covered parts of the body and found what he can do in removing hair without producing serious damage, not only by a breach of the surface, but by

injury to the nutrition of the affected part. It is obvious also that as from ten to thirty sittings are required, the proceeding would be somewhat costly, but so also is electrolysis if the number of hairs is very great. Moreover, owing to idiosyncrasy on the part of some patients and to peculiarities in some tubes, burns occur most unexpectedly, violent inflammation, sometimes setting in abruptly, from seven to fourteen days after the exposures have ceased.

At the end of six to eight weeks some signs of recurrence will be seen, and the exposures have to be recommenced, but a smaller number of exposures will be required than at first. Several such repetitions are often necessary, and this uncertainty, and consequent expense, and the risk of burning the skin, limit the procedure considerably.

High-frequency currents have also been used for the same purpose, but sufficient experience has not yet been gathered to pronounce definitely upon it.

The alternatives to the above methods are epilation, shaving, and depilatories.

Epilation with tweezers makes the hair grow coarser and longer. Shaving, having to be a daily performance, is viewed by most patients with great repugnance; and depilatories, while they are not more effectual than shaving, are dangerous applications, as they are liable to excite considerable irritation if the skin is sensitive; therefore I never employ or sanction them. Duhring recommends barii sulphidi ʒij, pulv. zinci oxidi, pulv. amyli āā ʒiij. Mix. Make into a thin paste with water, and apply on the hairy part for ten to fifteen minutes; when heat of the skin is felt, clean off the paste and apply a soothing unguent, and powder the face with starch to conceal the redness. Sulphid of sodium may be substituted for the barium salt. It must be repeated every few days. Many others are employed, but the patient should always be cautioned of the risk she runs in using them. Where the operation is impracticable on account of the enormous number of hairs or the expense of it being too great for the patient's means, I recommend shaving as the safest and easiest method, and as women are inexpert and have a repugnance to an ordinary razor, I have found an excellent substitute in Auguste Bain's Rasoir Mécanique, the "Star" razor, or similar contrivances; they do

not look like a razor, and the patient cannot cut herself, unless she tries to do so.

ATROPHY OF THE HAIR.

Defective nutrition of the hair may give rise to various structural alterations, which may be symptomatic or idiopathic.

The symptomatic cases are generally due to some constitutional disease, as syphilis, diabetes, fevers, phthisis, or other disorders damaging the vital powers. The hairs become dry and lusterless, of smaller diameter, and may split and break up in various ways.

Idiopathic atrophy includes those cases in which no general disorders to account for it can be traced.

Various affections come under this category, as follows:

The hair may be simply so brittle that it breaks off with the slightest strain, such as brushing and combing; this is one form of **fragilitas crinium**; or the hair may split in various ways. The most common event is for it to split at the end into three or four segments, which may extend some distance down

Fig. 78.—Hair of beard split down to the follicle. × 4.

the shaft. It generally occurs in long uncut hair, and therefore on the scalp hair in women, but it is also frequent in long-bearded men. Kaposi explains it by supposing that, owing to the length of the end from the root, sufficient nutriment does not reach so far along the shaft, and the hair becomes brittle and splits up. The obvious remedy for such a state of things is to clip the hair frequently, but this is not the whole story, for sometimes, as Duhring pointed out, and as I have myself seen on the beard, the splitting seems to take place from the root, and looks as if there were several hairs springing from one bulb (Fig. 78); the cause is unknown, beyond its being a trophic defect. It is attended sometimes with a pustular folliculitis of the affected hairs, but whether as a cause or conse-

quence is not certain. Marked cases of this kind are recorded by Rushton Parker * of Kendal, and by Duhring.† In one there was severe acne vulgaris, but not in the other. There was also associated trichorrhexis in Parker's case.

In another form the cuticle only is affected, and splits away, giving the appearance of the hair being frayed out; it may be only here and there, or all along the shaft.

Trichorrhexis nodosa (Kaposi). *Synonyms.*—Trichoclasis (Wilson); Trichoptilosis (Devergie); Swelling and bursting of the hair (Beigel).

It may be defined as a green-stick fracture of the hair shaft, and was first described by Wilson (1849), and then independently by Beigel (1855), Wilkes (1857), Kaposi, etc.

It chiefly affects men, attacking the whiskers, beard, or mustache, more rarely the eyebrows, and hairs of the axillæ, pubes, or scalp. I have once seen it on the front of the scalp in a lady who was apparently well, but had lived a good deal in hot climates. It began in a patch, the size of a sixpence, on the left

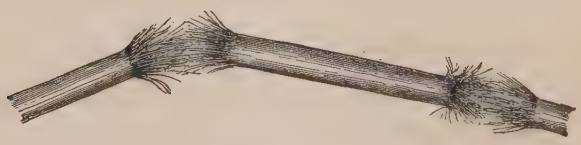


Fig. 79.—Trichorrhexis nodosa from scalp of lady, æt. thirty. Obj. $\frac{4}{10}$, occul. 2 in.

temple, and spread across, but did not quite reach the marginal hair on the forehead. Dr. Pratt of Leicester also sent me hairs from the scalp of a lady, æt. twenty-seven, in whom the disease had existed for six years without apparent cause. To the naked eye there appears to be from one to six or seven whitish spots, or small beadlike swellings, situated irregularly along the hair shaft, which may, at first sight, be mistaken for nits; but these are always on one side of the hair. The hair breaks off at these nodes with very slight traction, leaving half of it still attached to the growing part. Under the microscope the cortex is seen to be split up into its constituent fibers, the

* *Brit. Med. Jour.*, December 15, 1888, with engraving.
† *Amer. Jour. Med. Scien.*, vol. ii. (1878), p. 88.

medulla alone maintaining its continuity; and the whole has been aptly compared to two short-bristled brushes, stuck end to end (Fig. 79). Pigment granules are to be seen between the fibers, and have been mistaken for fungous elements, of which, however, there is no real evidence.

Beigel attributed this appearance to the formation of gas within the hair, which distended it to a bursting point; but the simple explanation of Wilson is the more probable, viz., that owing to damaged nutrition the hair becomes brittle, but instead of breaking completely across at once, breaks, like a tough stick, first at the cortex. Moreover, there is not always a node at the point of fracture, the shaft there being sometimes of less than the normal diameter.

Paul Raymond* states that trichorrhexis nodosa is very common on the labia majora of women, and ascribes it to a diplococcus rather larger than staphylococcus pyogenes, which behaves quite differently under cultivation. This organism, he thinks, erodes the cortex of the hair, and so weakens the structure and facilitates fracture. It is not nearly so common on the male genitalia, though both here and on the beard it is probably not so rare as is generally supposed. He found a similar, but smaller diplococcus on beard hairs in two cases; these cultivated small at first, but a few days later he found cocci of the same size as those from the female genitalia. He considers that though they are the proximate cause of the affection, they are not special to it, and are very common. He thinks the disease is communicable by contagion, and thus explains McCall Anderson's cases where it seemed to be hereditary.

Hodara† says that in the hair of women in Constantinople an affection very like trichorrhexis nodosa is very common, but that it differs in that the hair between the fractures is split, while in true trichorrhexis the internodal part is normal. He is not sure, therefore, whether these affections are identical, but he claims to have found in his cases a small bacillus with rounded ends, and other forms which cultivation showed were degenerative forms, and he even had the "happy opportunity" of inoculating a young girl with these organisms.

* *Ann. de Derm. et de Syph.*, vol. ii.(1891), p. 568.
† *Mal. Cutan.*, vol. vi. (1894), p. 641.

On the other hand, Bruhns * says that trichorrhexis nodosa is very common among the women of Berne, and his cases appear to resemble Hodara's. His conclusions are that his experiments are against a bacterial origin, and he argues that in fusiform hairs tricorrhexis occurs at the weak internodal point, while the argument that the disease is apparently communicated to hair-brushes is answered by the fact that it only occurs in old brushes, where mechanical causes sufficiently account for it. Ravence of Charleston, however, had it in his mustache, and found his shaving and tooth brush were affected. Moreover he quotes Räuber, who recorded the periodic appearance of trichorrhexis in an epileptic after fits.

Barlow † of Munich, after reviewing the work of Raymond, Blaschko, Hodara, Spiegler, and Essen, had previously come to the same conclusion as Bruhns, viz., that the parasitic origin had not been proved, and that the probabilities pointed solely to a nutritive change, which destroyed elasticity of the hair and made it liable to fracture from mechanical causes.

On the other hand, Markusfeld ‡ rubbed up some of the hair with pumice-stone in a sterilized mortar, and from this, by culture, obtained a bacillus which stained by Gram's method, and he identified it as the same as that described by Spiegler.

I have seen a case of a lady § whose back hair had been affected for eighteen months, and whose husband had had it in his mustache for six years.

The treatment is not very satisfactory. Shaving is recommended, and has, when long continued, sometimes been effectual; as a rule, however, the hair grows again as brittle as ever, Change of climate has been successful, and in all cases efforts should be made to discover and remedy any defect of the general health. Faradizing the part might be tried.

If the view of its parasitic origin is correct, careful removal of all affected hairs, if on the head, and sponging the rest with antiseptics, such as 1 in 40 carbolic lotion, or 1 in 2000 perchlorid of mercury, would be the treatment indicated for the

* *Archiv. f. Derm. u. Syph.*, vol. ix. (1897), p. 43. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 290.

† *Münch. med. Wochenschr.*, No. 26, 1896. Abs. *loc. cit.*, p. 121.

‡ Abs. *Jour. des Mal. Cut.*, vol. xi. (1899), p. 205.

§ Notes, F., 878.

head, but it is strange that shaving is not more uniformly successful when the beard is affected.

End Atrophy.* W. McMurray of Sydney sent me some hairs with the condition as figured, the ends showing thinning and fracture. Some of the root ends were infiltrated with air, which, it seemed probable, was the immediate cause of the atrophy. McMurray, in his account of the case, stated that the distal end appeared of a lighter shade and bulbous; in that case,

Fig. 80.—Dr. McMurray's case of end atrophy of the hair.

D. Root end of one of the hairs, showing the hair bulb permeated with air bubbles. This drawing was made by reflected light, the other figures by transmitted light.

it would appear that the atrophic ends I examined had broken off on the proximal side of the bulb.

Monilithrix. (*Synonym.*—Moniliform or beaded hair.) This is an extremely rarely recognized condition, of which the first description was published by Walter Smith † of Dublin and McCall Anderson. Smith described two cases of his own, and one of Liveing's; since then Lesser,‡ Payne,§ Luce,‖ Abraham,

* *Australian Medical Gazette*, July, 1892, p. 280.

† "A Rare Nodose Condition of the Hair," *Brit. Med. Jour.*, vol. ii. (1879), p. 291, and vol. i. (1880), p. 654.

‡ "Ueber Ringelhaare," *Vierteljj. f. Derm. u. Syph.*, vol. xii. (1885), p. 655, and vol. xiii , p. 151, with plate of the same case, a girl, æt. four and a half years; he mixes it up with the cases of ringed pigmentation.

§ Payne, "Hairs showing Nodose Condition," *Path. Trans.*, vol. xxxvii. (1886), p. 540, with plate. There were two cases, brothers, æt. one and two years.

‖ Luce's case, quoted in Ziemssen, p. 410, in connection with delayed hair development, is another instance.

Schütz,* Colcott Fox, Breda, Archambault, Hallopeau, Beatty,† etc., have published cases, and Thin's case,‡ shown at the Congress of 1881 in London, presented a closely analogous, if not identical condition.

Several members of the same family were affected in the cases related by McCall Anderson § and Fox and Sabouraud. Breda's case was an epileptic, and the formation of freshly affected hairs coincided with the fits. Francis' case followed influenza, when the girl was fifteen.

In this affection there is a regular succession of fusiform nodes connected by narrow portions, giving a very distinctly beaded appearance, and extending from root to tip (Fig. 81). Nearly all the pigment is concentrated in the nodes, the internodes being almost colorless—hence resembling, in that point, the alternating rings of color already described; but in that affection, with which Lesser has confused the one under consideration, there is no structural alteration. Nearly all the cases have occurred in childhood, or infancy, and most are probably congenital. The hair breaks off short, but always at one of the internodes, with a brushlike ending, and, all over the head, it is only about one to three inches long.

In Francis' case the nodes and internodes were only arranged regularly in a few of the most affected hairs; in others there was great variability in the number and arrangement of the nodes. Some hairs were unaffected, and there was no keratosis.

* Schütz, in recording another case of three and a half years, acquired in Cairo, gives copious bibliography, but includes ringed hair. *Archiv f. Derm. u. Syph.*, vol. liii. (1900), p. 69, with plate. The hair was spirally twisted, and there were spindles in the intrafollicular portion. There was keratosis at the mouth of the follicle. Pernet in examining Abraham's case came to the conclusion that the spiral twist was an optical illusion.

† Wallace Beatty and Alfred Scott wrote a paper in *Brit. Jour. Derm.*, vol. iv. (1892), p. 171. They give the abstracts of twenty-four cases besides their own, and consider the affection due to a trophoneurosis. They describe the inner root sheath as thickened at the internodes. Francis' case is in vol. vi. p. 363.

‡ Vol. iii. p. 190, of the *Trans. Internat. Med. Cong.*, 1881.

§ A remarkable family chart is recorded in Anderson's "Diseases of the Skin," p. 56, 14 out of 27 individuals in 6 generations having been affected; but this is beaten by Sabouraud, with 17 cases in 5 generations, in *Ann. de Derm. et de Syph.*, vol. iii (1892), p. 830.

Gilchrist * records a case in which moniliform hairs were found on the lower limbs at the periphery of some bald patches which formed at the age of seventeen in a healthy youth. Pernet found that the eyebrows and lashes were moniliform in Abraham's case.

The disease is due to defective development during the formation of the internode, while the nodal part is probably normal, or

Fig. 81.—Moniliform hair. Obj. 1 in., ocul. Zeiss 3 in.

The illustration is taken from a hair kindly given me by Dr. Walter Smith.

nearly so, in diameter. Fox found that the beaded arrangement extended quite down to the root of the hair. It affects not only the scalp, but both the fine and coarse hairs all over the body. Brocq says that keratosis pilaris is present in these cases, but it is not present in all, and when it is, C. Fox considers it to be secondary. There is nothing to be done in congenital cases, but, when acquired, efforts should be directed to the rectification of any defect in the general health, and local stimulation of the scalp with the faradic brush.

CANITIES.†

(Hoariness, from *canus*, gray-haired.)

Synonyms.—Grayness of the hair; Whiteness of the hair; Atrophy of hair pigment; Blanching of hair; Trichonosis cana; Trichonosis discolor; Poliothrix.

Canities may be simply one of the evidences of senile decay or may occur early in life. There are all grades of it, both as it affects the hair individually and collectively.

Collectively, it may exist pretty uniformly mixed with the normal color in one or more regions; or there may be one or more tufts of white, giving a piebald appearance; or the head

* *Amer. Jour. Cut. Dis.*, vol. xvi. (1898), p. 157.

†*Literature.*—Wilson's "Lectures on Derm.," 1878, p. 166, *et seq.* Landois, "Das plötzliche ergrauende Haupthaar," Virchow's *Archiv*, vol. xxxv. (1866), p. 575, with plate, contains numerous references.

may be quite white and the hair only gray elsewhere; or there may be blanching of the whole hairy system.

In some cases the whiteness is only temporary; thus Wilson relates a case where the hair was gray in winter and recovered its color in the summer. Sir John Forbes also had gray hair for a long time, then suddenly it all turned white, and after remaining so for a year, it returned to its original gray.

Griffiths of Louisville relates the case of a man, æt. sixty-five; originally his hair was blond, it became gray when fifty-seven, and for three years had been quite white. He was exposed to intense cold, as a fireman, for many hours, his head being well covered with a skull cap and helmet, and twenty-four hours later his hair became black and oily. In alopecia areata the new hair is often white at first, but it nearly always regains its color.*

While canities is generally slow of development it may be quite sudden, *e. g.*, in a few hours. Hebra and Kaposi disputed this on theoretical grounds; but apart from historical instances the following well-authenticated occurrences, while under medical observation, are conclusive on the point.

In Landois' case † the hair of the beard and head of a delirium tremens patient became gray in the course of a night while he was in the hospital. Brown-Séquard observed, in his own person, that a few hairs daily became white, and in Raymond's ‡ case, observed with Vulpian, the patient was a lady of neurotic type, who after mental strain had intense neuralgia; during a severe paroxysm the hairs changed color in five hours, all over the scalp except on the back and sides, most of them from black to red, but some to quite white; and in two days all the red hair became white, and a quantity fell off. She recovered her general health, but with almost total loss of hair; only a few red, white, and black hairs remaining on the temporal and occipital regions.

The case of a Spanish cock, which was nearly killed by some

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xiii. (1895), p. 376. He refers to several interesting cases of canities, and quotes the case of a woman whose hair, during a fever, became white in a week, and recovered its color in another week.

† *Loc. cit.*

‡ Quoted in *Lancet*, October 14, 1882.

pigs, is also to the point. The morning after the adventure the feathers of the head had become completely white, and about half of those on the neck and back were also changed.

Cases somewhat less sudden are more common. B. Thornton of Margate records the case of a lady in whom the hair of the left eyebrow and lashes began to turn white a fortnight after a sudden grief, and within a week all the hair of these regions was quite white, and remained so; but no other part was affected, nor was there any other symptom.

In Ledermann's case, a man, æt. twenty-four, the hair all over the head and body turned white in six weeks without apparent cause.

In Pincus' case, a man of thirty, the hair immediately turned white and remained so from the shock of a sudden grief. In a case of Gowers',* half the beard and mustache became white from meningeal hemorrhage; he died three days after the injury; between the normal brown and abnormal white was a narrow median zone of almost black hair.

R. Jones † of Claybury asylum related the case of a melancholic patient in whom the hair became completely white all over the body in five weeks. The root-ends were atrophic and the distal third infiltrated with air.

Individually a hair may be quite white, or, as I have seen it after alopecia areata, it may be colored near the root and white

Fig. 82.—Hair from a case of alopecia areata during recovery, becoming gradually pigmented.

at the distal end, the pigment extending farther in the medullary than in the cortical part (Fig. 82). The reverse of this is seen in the preparation No. 363, in the Museum of the College of Surgeons, the part near the root only being white, while the distal end is colored. It formed a narrow horseshoe band round the head, in a girl, æt. seven years. Richelot observed a similar phenomenon, in patches, in a girl with chlorosis; the newly-formed hair becoming again pigmented when the chlorosis was cured. In Falkenstein's case, a man, æt. thirty-three,

* *Lancet*, November 2, 1901, p. 1173.

† *Lancet*, March 1, 1902, p. 584.

many of the hairs were white in the upper and dark in the lower part, in various proportions; a few were white top and bottom, with a brown band between, up to half an inch wide.

Ringed Hair. A hair may also be white or colored in rings or bands, but this is very rare. In a case of E. Wilson's,* a boy, æt. seven, every hair was affected; the brown segment was double the length of the white one, together measuring one-third of a line, and Wilson thought the dark represented the day's growth, and the white that of the night. A specimen of a similar defect is in St. Bartholomew's Hospital Museum. In a case reported by Karsch † of Moscow, a youth of nineteen, all the hairs were not the same, the rings were not all of uniform diameter, being closest and narrowest in the middle of the shaft, while some hairs were half white and half brown and some all white or all brown.

A case very analogous to that of Karsch came under my notice. It affected the mustache of a gentleman, æt. thirty-nine, and was associated with trichorrhexis nodosa. The hairs were affected in various degrees (Fig. 83). Air bubbles were in stellate heaps round the medulla at regular intervals in some hairs, but not in all, and the pigmented portions were much longer than the unpigmented areas.

In a girl of seven ‡ the scalp hair had been affected two years when I first saw her; it came on after influenza and contagious ophthalmia, and five years later it was universal and unaltered in character. The hair from just above the root to the end showed a series of dark patches like Fig. 83, by transmitted light, and white by reflected light, due to air bubbles, with the intervals normal. The diameter of the shaft was uniform, but the hair was dry and lusterless, and did not grow for more than eight inches.

* Wilson's Lect., *loc. cit.*, No. 367–368, Coll. of Surg. Museum.

† "De Capillitii Humani Coloribus quædam. Diss. inaug. Gryphiæ," 1846. Quoted in full by Landois, *loc. cit.*, with plate and microscopic description.

‡ Private Notes, E. 759. Described in detail *Brit. Jour. Derm.*, vol. v. (1893), p. 175. In vol. viii. (1896), p. 437, Galloway reports the disease in two brothers of eight and ten years, in whom it was apparently congenital; and in vol. xiv. p. 86, Meachen reports a case with references to eight cases.

Etiology.—Sex has no influence. It is uncommon before the patient has grown up, but it is seen in children occasionally, and a few cases with one or more white tufts have been congenital, and even hereditary through several generations (Morgan, Joynt). The youngest idiopathic case in my practice was nine years old, and limited to a single patch. It may be seen in a single patch also after long-continued and severe neuralgia, in multiple symmetrical patches as a part of leukodermia, and as irregular piebaldness during recovery from alopecia areata. The lower grades of gray hair, and more rarely complete canities, are seen after specific fevers, especially scarlatina and typhoid, and after any prolonged strain or drain, mental or bodily, of the general system.

Premature grayness is also frequently due to family predisposition. The influence of a nervous shock, especially from intense fear or grief, both for gradual and rapid blanching of the hair, is generally admitted, *e. g.*, rapid whitening of the hair has been observed in some who suffered from melancholia. Another instance of nerve influence is when the eyelashes have

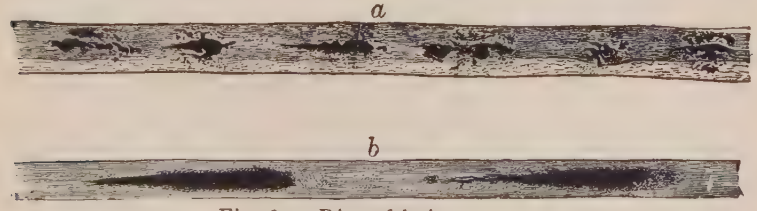


Fig. 83.—Ringed hairs. × 125.

a, from mustache; *b*, from scalp of another patient, viewed by transmitted light. By reflected light the darkest parts are shown to be air, the pigment being between these collections of air globules; the diameter of the shaft is slightly increased where the air is situated.

turned white in sympathetic ophthalmitis, after destruction of the opposite eye. Instances are reported by Nettleship,* Hutchinson, Jacobson, etc.

Pathology.—Ehrmann's explanation of the mechanism of hair pigment discoloration has already been set forth under the pathology of pigmentation in general, and is probably the correct one for senile and other gradually developed canities; but the theory of Landois and others, that air bubbles form in the

* *Lancet*, December 22, 1883, Rep. of Ophthal. Society.

substance of the hair, enough sometimes to produce perceptible bulgings and to conceal the pigment, which, however, is still present, best explains the cases of sudden blanching.

Prognosis.—As a rule, the prognosis is bad; the hair generally remains white for the rest of life; still, as will be seen from the cases related, recovery of the normal color does occur, and is most likely to happen when the color has been lost after some severe illness, or some other definite and remarkable cause. A remarkable case of restoration is related by W. O'Neill * of Lincoln. A man who was both bald and gray, æt. fifty-nine, became suddenly hemiplegic, and remained so; three and a half years later dark hair began to grow on the bald patch, and the gray hair of the head and beard began to fall off, and was replaced by dark brown hair, until the whole head and beard were the same as when a young man. The man was a great chlorodyne drinker.

Even in congenital cases, with tufts of white hair, it has in a few instances become colored. Unless the patient is over fifty canities after alopecia areata is generally only temporary. Where there is a hereditary tendency to early grayness the prospect of recovery is very slight.

Treatment.—But little can be done by way of treatment; no drugs or treatment have any direct influence on pigmentation production or distribution in the hair. Where it has arisen from exhausting disease or nervous strain, general tonics and hygienic measures may lead indirectly to restoration. Hypodermic injections of pilocarpin nitrate or hydrochlorate gr. 1-10, gradually increased, or tincture of jaborandi ♏x and upwards internally, might be tried. Faradization with the wire brush electrode also offers a chance for some cases. Arsenic and nux vomica as nerve tonics may be of some service. Dyeing the white hair may sometimes be an improvement.

* *Lancet*, July 20, 1889. See also cases by Graves, "Studies in Physiology and Medicine," 1863, p. 335.

DISCOLORATION OF THE HAIR.*

Several instances of change of color, other than canities, are on record. One of the most remarkable is Prentiss' case. The patient was suffering from pyelo-nephritis and anuria, for which pilocarpin hydrochlorate was subcutaneously injected for over two months. At the end of twelve days the hair, which was light blond, began to turn, and continued to get darker for some time after the medicine was stopped, and at the end of six months had become nearly jet black, both on the head and axillæ; the hair was also coarser, and the eyes had changed from light to dark blue.

Alibert and Beigel relate cases of women with blond hair which all came off after a severe fever (typhus in one case), and when it grew again was quite black. Alibert also saw a case of a young man who lost his brown hair after illness, and after restoration it was red. In an epileptic girl of idiotic type, with alternating phases of stupidity and excitement, in an asylum at Hamburg, the hair in the stupid phase was blond and in the excited condition red; the change of color taking place in the course of two or three days, beginning first at the free ends, and remaining of the same tint for seven or eight days. The pale hairs had more air spaces than the darker ones. There was much structural change in the brain and spinal cord. Smyly of Dublin reported a case of suppurative disease of the temporal bone, in which the hair changed from a mouse color to a reddish-yellow; and Squire records a congenital case in a deaf mute, in which, on the left side, the hair was in light patches of true auburn and dark patches of dark brown, like a tortoiseshell cat: on the other side the hair was dark brown. M. Mayer's case was a boy whose hair was a clear blond, but at the junction of the hair and nucha there was a band of reddish hair about two fingers in width. This was the third occasion in which the phenomenon had appeared. The first was two years ago, during convalescence from an illness, and the discoloration lasted about three weeks; it recurred in six

* *Literature.*—See paper by G. F. Jackson in *Amer. Jour. Cut. and Ven. Dis.*, vol. ii. p. 173. *Phil. Med. Times*, 1881, xi. 699. *Lancet*, June, 1881, quoted by Landois, pp. 583-84. Changes after death from dark brown to red, and from red to gray, have occurred in rare instances.

months, and this last time had lasted three weeks. Analogous conditions sometimes occur in lunatics.

Accidental discolorations occur of various tints, *e. g.*, blue hair is seen in workers in cobalt mines and indigo works; green hair in copper-smelters; deep red-brown hair in handlers of crude anilin; and the hair is dyed a purplish-brown whenever chrysarobin applications, used on the scalp, come in contact with an alkali, as in washing with soap.

ALOPECIA.

Deriv.—ἀλωπηξ, a fox, because partial baldness is common in that animal.

This is the generic term for all kinds of baldness, irrespective of the cause.

It may be complete or partial, and the latter may be in the form of general or local thinning; or in bald areas of various size.

The varieties of baldness are classified etiologically into congenital, senile, and premature, the last being idiopathic or symptomatic.

Congenital Alopecia. Although known to Hippocrates, this condition is rare, and when present is seldom complete, the hair being only scanty, patchy, or lanugo-like. Unless the hair follicles are absent, as in the complete cases of Schede * and Ziegler,† the baldness is seldom permanent, partial or complete growth usually taking place eventually. The skin itself, where the hair ought to be, may be normal, or there may be abnormalities of development in the skin as a whole, in the nails or in the teeth, and the secretions of the skin may be defective. A family predisposition to a scanty development of hair is not uncommon, and extreme abnormalities of the same character have been noted in members of the same family for several generations. There are even races like some Australian aborigines who are hairless. Illustrative cases and references are given in the footnotes.‡

* *Archiv f. klin. Chir.*, Bd. xiv. (1872), p. 158.

† *Archiv f. Derm. u. Syph.*, Bd. xxxix. (1897), p. 213. Three colored plates of sections of skin ; numerous references to date.

‡ Thurnam, *Med. Chir. Trans.*, vol. lix. (1886), p. 473. Two cousins

Senile Alopecia (Senile Calvities). Here, as Pincus and Neumann have shown, the loss of hair is only a part of the general atrophy of the skin structures. The age at which it comes on varies greatly, and all the other hairy regions of the body which share in the cutaneous atrophy are affected, but rarely to so marked a degree as in the scalp.

Seborrhea is also an important factor in a large proportion of cases.

The baldness begins first at the posterior part of the vertex and then spreads forwards and backwards until the whole crown is denuded, leaving only a fringe of greater or less width at the sides and back.

The theory to explain this distribution is that the scalp at the crown is much thinner than at the sides, and that the nutrition of the hairs at the vertex is therefore more easily in-

who had each only a lanugo growth on the body and head, only four teeth (molars), and who never perspired or shed tears. He quotes other cases. A girl of four years came under me who had been born without hair or nails, the nails began to grow, but abnormally, in a week, the hair not for three years, and there was atrophy of the skin generally. In my Atlas, Plate XC., Fig. 13, her nails and hand are shown, and there is an account of the case. In Hutchinson's case, also a boy, æt. three and a half years, there was congenital baldness of the scalp and atrophy of the skin generally and absence of the mammary glands. The mother had been bald from alopecia areata from the age of sixteen years. *Med. Chir. Trans.*, vol. lix. (1886), p. 473. In Paul de Molène's case there was no abnormality besides the baldness (there was a scanty fine down even at birth), but the mother had had alopecia areata for three years when nineteen years old, and her son when six years old also had alopecia areata. *Annales de Derm. et de Syph.*, vol. i. (1890), p. 548, several references. F. Pincus in recording a case gives full bibliography. *Archiv f. Derm. u. Syph.*, vol. l. (1899), p. 347. Audry, *Mal. Cut.*, vol. xiv. (1902), p. 9. records four cases of his own. Nicolle and Halipré relate that in one family there were thirty-six individuals in six generations with defective hair and nails, Some were born without hair or nails, others had lanugo growth and defective nails with or without chronic onychitis. *Annales de Derm. et de Syph.*, vol. vi. (1895), Aug.-Sept. Abs. *Brit. Jour. Derm.*, vol. viii. (1896), p. 417. Charles J. White met with a similar series of cases, but not so extensive, presenting similar clinical features. *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xiv. (1896), p. 220, with photographs. Hill, J. H., "Hairless Australian Aborigines," *Brit. Med. Jour.*, vol. i. (1881), p. 177. I have a photograph of an adult African negro absolutely hairless from birth. It was sent me by a former pupil, but I have lost his letter with notes of the case.

terfered with. A similar explanation is put forward to account for the comparative rarity of senile baldness in women, their scalp being thicker and containing more fat.

Idiopathic Premature Alopecia (Alopecia Simplex). As a rule, in this form, the distribution is the same as in senile alopecia, but sometimes the loss begins at the temples, the hair line receding until there is only a central crest left, which also ultimately disappears.

It may begin at any time after puberty, though not often before twenty to twenty-five years of age; this again is much less frequent in women.

According to Pincus, instead of being, like the senile form, a part of the atrophy of the whole skin, there is increase of the connective tissue, which contracts and compresses the hair follicle, and thus produces its atrophy.

There are, however, very strong reasons for believing that idiopathic baldness is exceptional, nearly all being really due to seborrhea. In this I agree with G. T. Elliot,* who examined carefully 344 cases in his private practice of premature baldness, and deducting 24 cases due to general conditions, found seborrhea, or, as he calls it after Unna, eczema seborrhoicum, in 316 cases, and that 64 per cent. occurred under thirty years of age. Four cases showed heredity as an uncomplicated factor, but there can be no doubt that seborrheic baldness may be observed to affect the males of a family at an early age for several generations, often also with premature grayness. Probably what is really inherited is a tissue similarly favorable to the growth of the seborrheic microbe.

Symptomatic Premature Alopecia. This may be temporary or permanent, the loss may be either sudden or gradual, and dependent upon local or constitutional causes. From constitutional causes it is seen after or during a severe illness, especially fevers, in cachectic conditions, such as phthisis, diabetes mellitus, myxedema, syphilis, leprosy, etc., or it may be of neurotic origin, as after violent shocks, or intense or prolonged anxiety.

The local causes are very numerous, the most common being:

1. Seborrhea of the scalp, which may lead to permanent

**New York Medical Journal*, October 26, 1895.

baldness; women are as liable to it or even more so than men, it being the chief of all causes in both sexes.

2. Most inflammatory diseases of the scalp, if severe or prolonged enough, such as erysipelas, smallpox, psoriasis, eczema, etc. The loss varies with the severity of the affection, and is usually recovered from after the removal of the primary affection, unless suppuration has been so free as to destroy the follicles.

3. It may be seen in lupus erythematosus, in morphea, and in folliculitis decalvans; in all these the baldness is permanent.

4. Brocq * considers that the keratosis pilaris seen in ichthyosis may in some cases affect the scalp also, and lead to permanent atrophy of the follicles, and falling out of the hairs involved, which are replaced by lanugo hairs, round which slightly reddened papules may then be visible. It is, he thinks, a fruitful cause of baldness in infancy, adolescence, and even maturity, and may occur without ichthyosis. He considers the ulerythema ophryogenes of Taenzer is a form of this keratosis pilaris capillitii, of which the ultimate result is a cicatricial atrophy of the skin, and that monilithrix is also due to it.

5. In parasitic diseases, such as tinea tonsurans, where the loss is temporary only, except after severe kerion; and in favus, where the loss is often permanent, owing to pressure atrophy, produced by the favus cups.

6. Syphilis may produce it either early in the disease, as a part of the general cachexia, or consequent upon some eruptions of the scalp, while in the later stage it may be due either to seborrhea, which is a very common affection after syphilis, or from ulcerative lesions.

In the first two the loss is only temporary and causes a general thinning, with lack of nutrition, shown by the straight, dry, and lusterless condition of what remains. In the latter forms it may be permanent from seborrhea, and will certainly be so after ulceration.

7. Local injuries—a blow producing a bruise, the sting of a bee (Wilson); friction—*e. g.*, from the headgear in women or from their straining the hair in abnormal directions.

8. Both the neurotic and parasitic forms of alopecia areata.

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), pp. 773 and 1197; also in his treatise, p. 384.

9. The administration of thallium acetate for the excessive sweating of phthisis has been followed by extensive loss of hair all over the body, in so many instances, that there can be no doubt that it was due to the drug. Giovannini could find nothing by microscopic examination in the skin or hair to account for it. The loss is only temporary.

ALOPECIA SEBORRHOICA.

Although the subject of seborrhea has already been discussed (p. 1110), its importance as a cause of premature baldness is so great that some points deserve further attention in this section of diseases of the hair. As here employed the term is not restricted to the oily form. The distribution of seborrheic alopecia is the same as that described under so-called idiopathic baldness, namely, the temples, vertex, and the frontal hair line.

This distribution is combined with the presence on the scalp of either an excessive greasiness of the surface from oily seborrhea; or fine glistening powdery scales; or greasy scales lying closely on the scalp and requiring to be scraped off; yellowish fatty matter, looking like pale yellow wax, sometimes evidently largely made up of scales, at others giving the impression of being only dirty yellowish wax. The waxy substances can easily be scraped off with a blunt instrument, the skin beneath being white and shiny. This abnormal secretion is most marked on the vertex, being rubbed off in washing at the temples and forehead, and being absent or scanty, as a rule, at the occiput and sides, parts which rarely become bald from seborrhea alone, *i. e.*, without active accompanying inflammation, although in long-standing cases considerable reduction in the width of the remaining fringe may take place.

I have, however, seen general thinning in a young man reaching down to the lowest border all round in a seborrhea in which the fatty deposition was limited to the infundibular orifice of the hair follicles, and from many of which a comedo-like plug could be expressed.

I have also seen a few cases of a sickle-shaped alopecia just above the ear, with marked horny sebaceous plugging at the follicular orifices, seborrhea of the vertex being also present.

In some of the most troublesome cases of general progressive thinning there is nothing but a true seborrhea oleosa, the scalp being constantly bathed in oily secretion of a dirty yellow color when scraped off. Both in this and in the drier form there may be very marked funnel-shaped depressions round the hair follicles which are filled with fat. In some cases the seborrhea is limited to these depressions, the surface being clean. Although this cupping at the hair follicles occurs chiefly in severe cases it may be partially or completely recovered from.

According to Sabouraud this oily form occurs almost exclusively in males, but this is by no means the case in my experience, as I have met with it fairly frequently in women and even girls under twenty-one; and although there is not complete calvities as in men, the thinning is very conspicuous when no artificial supplements are used, and it is the form most rebellious to treatment. I also do not consider that there is any real etiological distinction between temporal and coronal baldness. Although the temporal denudation is often more advanced in degree the vertex is always more or less thinned also, and is on its way to being completely bare.

Pathogeny.—On clinical grounds the presence of microorganisms with a pathogenic *rôle* has long been inferred.*

Bacteriology.—Malassez as far back as 1874 described minute oval and round spores which were abundant in the horny layers and penetrated into the follicle nearly as far as the sebaceous orifices. Bizozzero (1884) confirmed this, and has been followed by Boeck, Pikhelharing, and others.

Then came Unna (1890),† who with improved knowledge and means of investigation, while confirming previous observations, showed that the organism should be referred to the schizomycetes, and named the chief organism from its shape, the flask or bottle bacillus. There is also a tiny bacillus to be found in the sections. Van Hoorn has gone over the same ground, and found the same organisms, and described the small bacillus, which he cultivated, as very abundant and constant in the scales and hair follicles.

W. H. Merritt‡ (1895), working on G. T. Elliot's cases, describes two kinds of diplococcus morphologically similar, but while both are aerobic

* Yet Sabouraud says that before he demonstrated his microbacillus in 1897, neither he nor anyone else "had the idea that calvites could be a microbian disease."

† "Histopathology," p. 233.

‡ *New York Med. Jour.*, October 26, 1895.

and non-liquefying, No. 1 is non-chromogenic, and No. 2 is chromogenic. Inoculation with No. 1 produced a reddened area with dry white scales; with No. 2 yellowish spots appeared, resembling some forms of seborrhea; and with a mixture of 1 and 2 on the fourth day, gave rise to areas with typical crumbly greasy scales. He also found a bacillus with rounded ends, but probably of non-pathogenic influence. These experiments would seem to settle the matter conclusively, and the yellow color often seen would be accounted for by No. 2* diplococcus, but another organism was described by Sabouraud † (1897), after laborious researches, and he affirms that the specific organism is a micro-bacillus (the acne bacillus of Unna), punctiform and very like a coccus in its young forms, but in its adult form it is one μ long and a half μ in diameter. It is best stained by the Gram-Weigert method.

This he has succeeded in cultivating in a special acid peptone-agar medium, but not always in pure culture from the first. The yolk of egg is also an excellent medium. Whether in oily seborrhea of the scalp, the face, or in the comedo, this micro-bacillus is the one fundamental organism. I am glad to find he emphasizes what I had observed clinically, that the pure oily seborrhea capitis was the most destructive to the hair and the most rebellious to treatment. In the more waxy forms there is a mixture of the oily seborrhea and scales, and then there is present not only the seborrheic micro-bacillus, but the bacillus spores of Malassez, which is the bottle bacillus of Unna, and a staphylococcus.

In the scaly form there are innumerable corneous scales, pityriasis or seborrheic eczema of Unna, but no seborrhea, therefore, no micro-bacilli, but bottle bacilli, and cocci.

The above may be put almost algebraically: mb = oily seborrhea; mb + bb = waxy seborrhea; bb + sc = pityriasis without seborrhea, Q. E. D. Sabouraud. Yet Jacquet holds that the increased oily secretion is a normal result of puberty, and the bacilli are therefore banal organisms. Their constancy under the above conditions contradicts this, replies Sabouraud.

The mechanism of seborrheic alopecia as unraveled by Sabouraud is as follows: The specific micro-bacillus invades the follicle by the follicular orifice, it multiplies and forms a thin lamina made up of microbes which separate the hair shaft from the wall of the follicle and descends almost to the level of the orifice of the sebaceous duct.

The epithelial irritation excited in the neighborhood produces horny layers which encyst the microbian colony and form what Sabouraud calls a cocoon, which is attached to one side of the hair shaft. The conse-

* In the Museum of the Coll. of Surg., No. 341, Derm. Series, there is some hair of a lady, æt. eighty-two. The white hair is stained golden yellow by an abundant gummy secretion from the scalp. It came on after an attack of jaundice, and had persisted for five years. It also stained her linen and had a disagreeable odor.

† *Les Annales de l'Institut Pasteur* (1897). See also his "Seborrhée, Acnés, Calvitie (1892), p. 164.

quences of its presence manifest themselves in sebaceous hypersecretion followed by glandular hypertrophy to three or four times the normal size, and progressive atrophy of the hair papilla. Lymphocytes and giant cells in small quantity are found round the microbian utricle, round the neighboring vessels, in the angle of the arrector pili and shaft, and round the base of the follicle and the papilla. The functions of the latter are interfered with, the pigment is no longer conveyed to the hair cells, the medullary cells of the shaft are no longer produced, the diameter of the shaft is diminished, and hence the adult characters of the hair are lost and the new hairs have neither pigment nor medulla; finally, even this weak substitute is not produced, hair production ceasing altogether and the papilla itself disappearing.

Unna† explains the process differently. The follicular orifice is dilated by abnormal horny layers round the hair into an infundibulum, with its apex at the mouth of the sebaceous glands. The root sheath is retained in the follicle and thrown into folds which press on the hair and tend to loosen it. The sebaceous glands are very little altered at first, but ultimately their secretion is arrested, and the gland is distended, as the secretion cannot escape as it should.

The loss of hair is not due to loosening of the root-sheath or atrophy of the papilla. The causes are due to changes in the upper and middle layers of the follicle, leading to diminished hair formation, and not to atrophy of the papillary hairs. New smaller papillæ are formed, or there may be a shortened old epithelial process with a remnant of the papilla, a lanugo hair only resulting, and from the increasing difficulty of hair formation it ultimately reaches the vanishing point.

The hairless follicles are finally converted into sebaceous glands, and sometimes into sebaceous cysts.

Personally I incline to Sabouraud's explanation, but it has not as yet quite acquired the status of a dogma.

Prognosis.—Seborrheic alopecia, if untreated, goes on slowly, as a rule, but surely, until the whole vertex is denuded of hair, a fringe of hair being left at the sides of varying width in different cases, but wider behind. Under treatment the result varies according to whether the patient seeks advice early or late in the disease. In the latter, more or less of the vertex may be permanently bald, while the process in the remaining hair may be arrested and a little renewed hair be obtained. In an early stage there may be almost complete restoration of the shed hair, but inasmuch as the disease is due to a tissue proclivity to a microbe, and this is deep down in the upper part of the follicle, a lasting cure is rarely obtained, and the patient has to apply a microbicide once or twice a week for an in-

* "Histopathology," p. 234.

definite period after the daily treatment has produced an apparent cure.

Treatment.—The principles of such an internal treatment as may be required in some cases is referred to in the chapter on Seborrhea, and only the special measures for the scalp which are usually all that is required, will be discussed here.

Applications may be made in the form of ointments or lotions, and they are all, in these days, microbicides. The time-honored cantharides occupies a very subordinate position, for, as a rule, if the microbe and its immediate consequences are removed, the hair is nearly always ready enough to grow. The great majority of patients infinitely prefer lotions to ointments, and as it is often difficult to make them use ointments for any length of time I generally prescribe lotions.

If there is present a fatty or waxy seborrhea, a preliminary cleaning with soft soap, spirit, and thymol (F. Lotions 8) is desirable to facilitate the absorption of the watery lotion. It may be repeated once in two or three weeks. After rubbing it on with wet flannel it should be rinsed off with tepid water, the hair dried, and one or other of the following lotions immediately sponged in:

The formulæ that may be written for the daily lotion are very numerous, and I will only give a few which I have found useful. Acidi acetici ℥ss, resorcin ʒij, eau de Cologne ℥ij, aq. rosæ ad ℥viij; ol. ricini ʒss mixed with the eau de Cologne, or a little glycerin may sometimes be added. The hair should be parted in small portions and the lotion well rubbed in to the scalp with flannel or sponge, the greatest attention being paid to the vertex and its neighborhood.

Sodæ sozoiodolatis ʒiij may be substituted for the acetic acid and resorcin. Sodæ hyposulphis may also be used, but the nascent sulphur lotions are still better (F. Hair Lotions 51). The sozoiodolate and nascent sulphur lotions are preferable for the oily forms to the acetic acid and resorcin, which acts best in the drier form. Where there are signs of commencing inflammation of the scalp a lotion of glycerini plumbi subacet. ℥i, liq. carb. detergens ℥ss, acquæ rosæ ad ℥viij is often one of the best applications.

Sometimes when the scalp is very dry it is desirable to prescribe a pomade to be used whenever the head is shampooed,

such as hyd. perch. gr. 1, aqua rosæ ʒj, lanolin ʒij, adipis ad ℥j, or, hydrarg. biniodidi, pot. iodid āā gr. ij, with the same vehicles. Here it may be observed that daily washing of the head, as practiced by many men, is nearly always injurious.

When ointments are prescribed they are generally some preparation of mercury, the diluted nitrate, yellow oxid, or ammoniated mercury, or they may contain sulphur, resorcin, or salicylic acid. Vasogen iodin ten per cent. ʒj, heavy paraffin oil ℥j, is often serviceable.

A good formula for obstinate cases in the scalp I have found to be ung. hyd. nit. ʒj to ʒiv, ol. cadini ʒj, ol. olivæ ʒij, lanolin ʒiv, misce; this is to be well rubbed in every night, and, if the daily avocations require it, washed off in the morning with borax ʒij, to water Oj, and then a little almond oil may be rubbed in, or the ung. hyd. oxid. flav. may be used instead of the nitrate, with or without the oil of cade. Where there is hyperemia a soothing remedy may be necessary at first.

ALOPECIA AREATA.

Synonyms.—Porrigo decalvans; Tinea decalvans; Area Celsi; Alopecia circumscripta; *Fr.*, Pelade.

Definition.—An acutely produced baldness, with complete denudation of the affected parts, primarily in round patches, but which may spread into large areas, or even over the whole hairy system.

At least four classes of cases are recognizable under the term alopecia areata.

In the first are universal cases, usually of rapid development, and not necessarily in patches.

In the second are those cases with one or more patches in the course of a nerve, or on the site of an injury.

In the third are cases of the common type, in patches or bands of irregular distribution, and with characteristic(!) hairs at the border of the spreading patches.

In the fourth seborrhea capitis is a very conspicuous feature and is probably in etiological relationship.

The first two classes are undoubtedly of tropho-neurotic

origin, and the third and fourth are, in my opinion, parasitic, and form the largest proportion of the cases.

The first two, therefore, form a group which might be comprised under the head of "**Alopecia Neurotica,**" with subgroups universalis and localis, and the last two would form a group of **alopecia parasitica,** one of which is certainly of seborrheic origin, and Sabouraud says both are so.

Class I., **Alopecia Universalis,** comprises those cases in which the alopecia is universal, and in which the hair does not necessarily come out in patches, but there is general falling off, often very rapid, and accompanied in some cases by changes in, or even falling off of some or all of the nails, as in the following instance: A boy, aged eight years, without any apparent cause or preceding ill-health except a poor appetite, within ten days lost the whole of the hair all over the body, together with all the finger and toe nails. Three years later, when I saw him, there was not a hair or nail present, and the nail bed was rough and irregular, as if the nail had been torn off, leaving a little horny matter behind. In a second case, a boy of fourteen, the whole of the hair had come off some time previously, soon after a fall from a tree on to his head. In a third, a girl aged two years fell nine feet from a window. She did not recover complete consciousness for three weeks, and a week after regaining her senses the hair began to come out on the left side of the head, and she became quite bald in a week, with the exception of a small tuft at the left occipito-parietal suture; the nails were unaffected. A year and a half later the hair was returning, leaving circular bare patches like a commencing alopecia areata. Rapidly universal cases after worry, fright, and injuries to the head have been recorded by Tyson, Duckworth, Cooper, Todd, Holmes, Collier, and others in this country and abroad. In some the hair began to fall out in patches; in others it came out indiscriminately, or even in masses. In a captain, whose ship was struck by lightning, and who sustained scalp wounds, it began the very next day on the beard, and then the scalp and the rest of the body were denuded; two months later the nails scaled off from the fingers, but not from the toes. In several other of the above cases some or all of the nails were lost. In one of Tyson's cases the big toe and

thumb nails alone escaped. In a case of Bidon's * a healthy boy lost all the hair of his head a few hours after a transitory fright, the eyebrows and lashes followed in a few days, and the loss was permanent. In a case of Boissier's a father saw his child killed, as he thought. The next day the hair began to fall out of the scalp and face, and alopecia was complete in a week. Regrowth immediately began, but the hair came back quite white and remained so. In a very large proportion of these loss of hair is permanent, and the course is for the most part rapid. In the following instance it was more gradual. A woman, aged thirty-five, began to lose her hair during pregnancy, nine months before I saw her, but it was several months before the alopecia was complete on the scalp, with the exception of a few straggling hairs on the back. The eyebrows and lashes were partially lost; some of the nails were deeply furrowed, others were half separated from the matrix, while others again were flattened, with slight pitting. The universal cases of this type are really very rare, although, owing to their striking character, a considerable number are recorded in dermatological literature.

In this and in the other forms where a sufficiently large area is affected the skin is whiter than normal, preternaturally smooth, and soft to the touch when pinched up; it is evidently thinned, and having lost much of its elasticity, pits slightly on pressure. The loss of the eyebrows and lashes produces a striking and characteristic aspect. The downy hair of the body is also often lost.

Class II., **Alopecia Localis seu Neuritica,** comprises cases of baldness occurring in one or more patches at the site of an injury, or in the course of a recognizable nerve. These are very few in number comparatively, but there are many on record. In a woman with melancholia, aged thirty-four, whom I saw with Dr. Savage at Bethlehem Hospital, there were white patches of hair in the course of the left supra-orbital, and one between two or three inches in diameter was almost bare; there was no history of them obtainable. Many cases have been preceded by severe and persistent neuralgia, and even when the hair is restored on the bald patch it not infrequently remains white.

* *Jour. Mal. Cut.*, vol. xi. (1899), p. 372.

In Pontoppidan's case, a girl, aged ten, had some glands removed in the left carotid region, which was followed by ocular paralysis, indicating injury to the sympathetic nerve, while loss of hair in areas on the back of the head took place, and six weeks later the whole back of the head became denuded in the region corresponding to the domain of the great and small occipital nerves, and the posterior branch of the great auricular. Within three months the hair began to grow again. Joseph excised the second cervical ganglion in the cat and rabbit, and this operation was followed by alopecia patches in the territory of the second cervical, the occipital, and the great auricular nerves; but the results were not uniform, and his experiments, though partially confirmed by Mibelli, are not accepted as conclusive; for Behrend and others have not been able to get the same effects. If my theory that there is a neuritis in all this class is correct, the experimental discrepancy might be accounted for by the presence or absence of that factor, as it is probable that in the most careful experiments the neuritis would be avoided. In corroboration of the neuritis theory two cases related by J. Collier * may be cited. In one a schoolboy received a blow on the left ear in a fight; it was followed by severe neuralgia, which lasted a fortnight, and then a large bare patch was noticed in the left parietal region; in about a month the hair grew again, but was quite gray. In the other case a blow with a cricket ball was followed by a bald patch one inch above the injury; the hair grew again after some time. Similar cases are scattered through the literature of the subject.

It is probable that there are other cases of neurotic origin in which bare patches are formed resembling, and sometimes indistinguishable from, the last class, which I regard as parasitic, but which many dermatologists retaining the old view consider to be neurotic. Of these may especially be mentioned the cases in which leuko- and melanodermia are associated with what in other respects resembles ordinary alopecia areata. In some cases the leukodermia has preceded and in other cases followed the alopecia, and although the number of these cases is very small, perhaps one per cent., yet inasmuch as leukodermia is a rather rare disease, the association is more frequent than can be accounted for by "coincidence," and as leukodermia is uni-

* *Lancet*, June 11, 1881.

versally regarded as of neurotic origin, the associated alopecia would then probably be of similar pathogeny. Thibierge states that the alopecia which may occur with leukodermia is of a special type, and is of bad prognosis. I have not been able to verify the statement.

In one of my cases, a girl of seven, the baldness was said to have begun in patches after a fright, but was complete when I saw her, and of nine months' duration. There was symmetrical leukodermia of both hands and forearms, which came on some months after the alopecia. This child has recovered the greater part of her hair.

The difficulty of coming to a conclusion in some cases is shown by the following instance:

A youth of eighteen, of general good health and physique, had a very marked degree of seborrhea, three patches of alopecia areata, and leuko- and melanodermia, which had followed the alopecia. This case can equally well be regarded according to the bias of the observer as alopecia areata produced by the seborrheic microbe of Sabouraud, or as a neurosis which also led to the leukodermia, or as three independent conditions.

Class III. represents what may be called true **Alopecia Areata,** and is the accepted type of the disease, the previous forms having hitherto been mixed up with it. In opposition to the other groups, it might with propriety, in my opinion, be called alopecia parasitica. Inasmuch, however, as its pathology is still a moot point it is better to adhere to the generally received title of alopecia areata.

It forms probably 90 per cent. or more of all the cases of alopecia with complete denudation of the affected part, and of all forms of skin disease about 2.5 per cent. in England, 1.5 per cent. in Scotland, 3 per cent. in France, .5 to .8 per cent. in North and South Germany, and about .5 per cent. in America. In my private practice it is nearly 6 per cent., but this probably exaggerates its real frequency.

Symptoms.—The disease usually commences on the scalp, or in males it may be on the whiskers or beard; less frequently it may affect any part that is normally hairy, such as the eyebrows, axillæ, and pubes, or even the downy parts.

There may be only one or many patches, the multiple patches being formed in irregular succession and arrangement, symmetry being exceptional. Although there is no unilateral tendency, on the whole, in men, the earlier patches are more often situated posteriorly, just above the line of junction of the parietal and occipital bone, and at a corresponding level at the sides; this corresponds in many instances with the line of close contact of the head covering. The chin is also a not uncommon position, but most frequently in those who are clean shaved. The shape of a patch is primarily round, though it may become irregular by coalescence with neighboring patches.

When not compound the patches range from one-half to two inches in size, and while each is generally rapid in its forma-

Fig. 84.—Band form of alopecia areata.

tion at first, subsequently it may spread very slowly. There is no limit to the area of the compound patches, and by the frequent formation of new ones the whole scalp and face may be denuded. On the other hand the disease may be arrested at any point, from a single small patch upwards.

A less frequent form is a broad band of baldness which may extend posteriorly from ear to ear or go all round the head (Fig. 84). This band or serpiginous form is much less common than the round patch form, and often extends much more rap-

idly. In one of my cases the hair came off in zigzag channels until the whole scalp became denuded. This variety is the **ophiasis** of Celsus, who considered it the more favorable form, but this is only correct when it occurs in children; in adults, in my experience, the prognosis is not so good as in the ordinary form.

Quite recently Sabouraud has claimed this form as exclusively a disease of childhood, and only seen in adults as a recurrence. This is true only for the majority of cases. I have seen repeated instances in which the first attack was in adult life. Moreover, both in children and adults it is often seen in association with ordinary patches and (!) stumps may also be present. A girl of ten contracted tinea tonsurans with scaly and stumpy patches; a year and a half later her hair came out and she was completely bald in a month. Three years later the hair was completely restored, except a band one inch wide extending posteriorly from ear to ear. Two years after this a bald patch appeared just above the nape with numerous (!) stumps at the border. I cannot therefore acknowledge that there is either any essential difference between the ophiasis commencing in childhood and that of adult life, and there are so many connecting links that I could never satisfy myself that there is a pathogenic difference between band and patch alopecia.

Sabouraud,* however, is inclined to a neurotic theory on account of its symmetry, and because he cannot find his seborrheic micro-bacillus or other organism, but ordinary seborrhea never is seen in this position.

The surface of the bald patch is as smooth as a billiard ball, whiter than normal, and whether from the loss of so many hair bulbs, or from atrophy of its own tissue, the scalp is obviously thinner than before, more lax than in health, and sometimes slightly depressed below the healthy skin, and while the tactile sensibility on the patches is inappreciably diminished, except perhaps with an esthesiometer,† there is much less sensitive-

* Sabouraud appears to think he has re-discovered this variety, and says that it is not described by any modern authors. This may be true of French, but is certainly not so of English authors, from E. Wilson downwards. It was figured in my last edition.

† Neumann says it may be anesthetic.

ness to irritants, the diseased area often remaining unaffected, while the normal skin is inflamed by the remedies applied. On the borders of the patch, as long as it is spreading, there are a few short hairs, as characteristic in their way as those of tinea tonsurans, and I have never met with them in the indisputably neurotic cases. They are generally about an eighth of an inch long, sometimes longer, quite straight, thicker at their free end than at the point of insertion, come out almost with a touch, and end in a point, or show a slight thickening at the end of the otherwise atrophied root, and look just like a note of exclamation sign (!), with or without the terminal dot (Fig. 85). In the early stage a few of these hairs may sometimes be seen in the middle of the patch, and I once saw a commencing patch uniformly covered with these hair stumps, but they were all

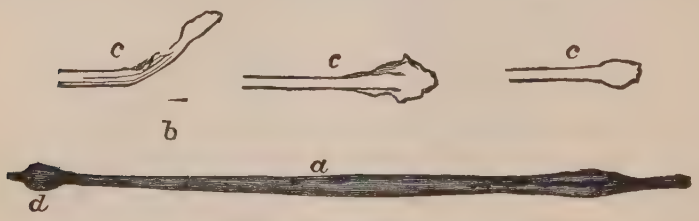


Fig. 85.—Short (!) hairs of alopecia areata.

b, natural size; *a*, the same hair × 50; *c*, *c*, *c*, atrophied roots, × 50.

gone by the following week. In some cases they are present in enormous numbers, and constitute what Besnier calls "pelade à cheveux fragiles." There is, however, no essential difference between these and the ordinary forms, but they indicate that the case is one of rapid extension. The thickening of the free end is only apparent, and represents the diameter of the normal shaft, which, owing to damaged nutrition, has broken off close to the surface, while the atrophied root is gradually extruded, and soon either falls out or breaks off at its thinnest part; hence their presence is a sign of recent extension, and they are never present in old stationary cases. Another sign of active extension is that the apparently normal hair adjacent to the patch is very loose; a moderate pull will bring out many hairs at a time.

The course of the disease is very variable. While in some cases the patches seem to form suddenly, whole tufts of hair

coming out when it is combed in the morning, without any previous symptoms, or at most slight itching, and then perhaps going on from bad to worse, patch after patch forming and running together until all hair is gone; in others it proceeds much more slowly, taking weeks or months before the whole head is denuded; or, after going on for some time, the disease may come to an apparent termination, the hair begins to grow over some patches, while fresh ones are forming elsewhere, or fine, downy hair springs up after some time, only to fall out after a brief sojourn. In very favorable cases the disease stops after one or two patches have appeared. A patch may be perfectly stationary for a long period and then begin to spread and fresh patches appear elsewhere.

When the disease takes a turn for the better the hair round the patches can no longer be easily pulled out; then the patch gets smaller by the formation of new hair at its periphery, or in very happily circumstanced cases, or when the patches are small, new hair springs up uniformly all over the bald area. This new hair is generally very fine and pale, and lanugo-like, even in dark-complexioned people, and is seldom of normal color at first. In many it is quite white, and thus there may be patches of white mingled with the normal darker hair, producing a curious piebald appearance. When the whole scalp has been denuded I have seen the whole of the hair return quite white, and after some months gradually resume its normal dark color.

Eventually, unless the patient is on the wrong side of fifty, when the result is doubtful, the hair becomes more vigorous, and the pigment is restored, and it is occasionally possible to trace its progress. Thus at the distal extremity, or first formed part, both cortex and medulla are colorless; nearer the scalp the medulla is pigmented, but the cortex is white; while nearer still the whole is permeated with pigment particles (Fig. 82). Although recovery is generally very slow, months or years being required for it to be complete, the partial cases, in all but the elderly, almost invariably get well, and a large proportion even of the generalized ones eventually get sometimes complete, sometimes incomplete, restoration. Relapses are frequent, either soon or only after a long interval, in about twenty per cent. of the cases in my experience, some of them having

been attacked several times. In a lady of thirty-two years it began when she was seven years old, and she had often been nearly well, *i. e.*, with only a single small patch; but she had never been quite free. This patient was a strong, healthy woman. In the unfavorable cases the scalp becomes very smooth and shining, and the orifices of the hair follicles are either obliterated or marked out only by sebaceous secretion, and there is often a white atrophic circle round each orifice.

In those who wear a beard or mustache the first sign sometimes is not baldness, but a portion turns white and may enlarge, the hair not falling out for some weeks or months afterwards. It is, however, much more frequent in those who are habitually shaved at a barber's, the first sign being a bald patch.

Variations.—Besides the band form already mentioned there are cases in which one or more pea-sized bald spots appear in various parts of the scalp. They show very little tendency to enlarge, seldom attaining to more than half an inch, and the majority are not more than a quarter of an inch in diameter; their number, however, is very likely to increase, and occasionally they are very numerous. Their aspect is pearly white, and they are often difficult to distinguish from a scar; it is seldom possible to find any diseased hairs at the border, and very difficult to make hair grow upon them. Such a condition may be seen sometimes as a sequel or complication of ordinary ringworm, but it may also occur without any history of such an antecedent, either sporadically or in groups of cases in schools or families. It must be distinguished from the concave permanently bald cicatrices of alopecia cicatrisata.

Class IV.—**Alopecia Seborrhoica Circinata.** For some time past I have observed cases in which one or more circular bald patches have been present in association with dense seborrheic scurfiness of the scalp. The denudation is complete, but the surface is more or less scaly like the rest. At the periphery of the patch may generally be found some short straight hairs, which do not pull out easily, and are longer than and not like the characteristic (!) stumps, although a few of the latter may be occasionally found as well.

There is often only one patch, and seldom more than two or

three, and the patches are usually on the vertex, more often behind than in front. This variety is of interest, especially as lately Sabouraud has claimed that all true alopecia areata is the direct result of the seborrheic bacillus—a view which does not appear to me to be consonant with the clinical facts. The above variety is not very common in my experience, occurs in children even more often than in adults, and is usually very amenable to treatment, whereas Sabouraud's seborrheic alopecia areata appears to correspond nearly with my Class III. But he says that it never occurs until after puberty; does not attack the borders of the scalp, and that the stumps never have a brushlike termination, but are always beveled. From all these "nevers" I strongly dissent. Finally, his statement that the seborrheic micro-bacillus is present in all the cases he has examined, I am quite willing to accept on his authority, but not the deductions he draws from the fact. I only accept this organism as one of the causes of bald patches. With regard to stump-ends a brushlike termination is not very uncommon, and Blaschko says trichorrhexis is a very frequent, if not constant, initial sign of alopecia areata. I should, however, say that a beveled end is the rule.

Etiology.—The disease occurs in both sexes, but is said by some authors to be more common in females; but this is not true—in my experience, out of 506 hospital cases, 275 were males and 231 females. In my private practice the proportion is nearly the same. The range of age is from two to sixty, but only 10 out of the above cases were under five, and 21 only over forty-five. It is much more common in childhood; 214 of my cases were under fifteen, 214 occurred between fifteen and thirty-five, 57 between thirty-five and forty-five, and 21 after that age. These statistics show that it is not most frequently a disease of middle age, as Sabouraud states.

It has been asserted that it occurs exclusively among dark-haired people. This, however, is certainly not true. I have repeatedly seen it among fair-haired persons of both sexes, but I am inclined to believe that it is more common in dark-haired persons. A man, aged twenty-nine, said that the disease was of fourteen years' duration altogether, though his hair had regrown several times. The mother, who has dark hair, first had it, then the patient, who also has dark hair, and then his

younger brother, also with dark hair. The father and sister, who have fair hair, have not had it. This is not a solitary instance of such a preference. It is seen in all stations of life, but not often in the most prosperous classes.

The etiology of the admittedly neurotic group has been sufficiently discussed with the clinical description of each class. There remains, therefore, only that of Class III., or alopecia areata proper. In a very large proportion of cases the evidence is entirely negative, and satisfactory explanation of its causation cannot even be conjectured from the history. In a small number there is very strong evidence of its having been communicated from another sufferer from the complaint. In a larger number it can be shown that contagion is the probable cause. As an instance of direct contagion may be given the case of a lady of fifty, who stated that hers began soon after sleeping for three weeks with a married daughter who was suffering from it, who, in her turn, ascribed it to having slept with a lady who had been quite bald from childhood.

Cases where contagion is probable are dependent on the patients' statements that they have been in more or less close contact with others suffering from it, or that bald patches came on the chin soon after being shaved by a barber, or on the head soon after having their hair cut, especially when the tondeuse, or hair-clipper, has been used. Three of my patients have dated it as occurring soon after wearing a hired wig at amateur theatricals.* In a case of Feulard's it was ascribed to wearing a carnival mask which had previously been worn by a brother who had long suffered from alopecia areata.

In a few instances I have seen it in more than one member of the same family, such as brother and sister, mother and child, father and child.

Endemic outbreaks of bald spots, usually of very small size, in schools, etc., have been observed several times; one of the

* In March, 1897, a man, æt. thirty-one, came to U. C. H. with alopecia areata, which had been present for a year and a half in patches. He stated that he had a child who was born with a fair amount of light hair. When five months old it began to lose its hair in patches like pennies. I saw the child when nine months old, and found that, although the hair was very thin at the temples, in the left occipital and the right parietal regions there were no bare spots.

best known instances is that of Hillier,* in a parochial school of eleven hundred children of both sexes. The disease was limited to the girls of one block from seven to fourteen years old, forty-three of whom were suddenly found to be affected, while one girl had had it for some time. The patches varied in size from a fourpenny-piece to an inch or more in diameter; on some children there was but one bald spot, on others two or three; most of the patches were round, but some were irregular. He found in the root-sheaths of two or three hairs a number of spores of a fungus, having all the appearance presented by the fungus of tinea tonsurans, and many atrophied hairs.

A still better example, because it was investigated by a skilled observer in the light of recent researches, was recorded by Bowen of Boston, U. S. A.† In a school of sixty-nine girls from three to fourteen years old sixty-three were affected more or less. The great majority had very small, almost punctate lesions, but there were numerous cases with large patches of the ordinary type; in no instance could he find any trace of ringworm stumps or scales.

The following series of my own are evidently of the same nature: Eight children in one family, while at the seaside, had each a few small, perfectly bald spots on their heads. They were quite bare from the first, and never larger than half an inch in diameter. After a time the governess, æt. twenty-four, observed three pea-sized, oval, bare spots on her own head. She then went to her home, where her doctor told her it was alopecia areata, and not contagious. She therefore slept with her adult sister, who soon afterwards showed similar spots on her head. The mother of the children, when she came to me, had a bare, round spot half an inch in diameter, in the occipital region. It had been noticed for three weeks. The hairs round were loose, but there were no short hairs.

In no case were there more than three spots, and they were all small. In one child there was a history of a red ring on the side of the cheek. Whether this small-patch variety is the same, or a different disease from the ordinary form of alopecia areata, is open to discussion.

Many endemic outbreaks have been recorded from time to

* Hillier's "Handbook of Skin Diseases," p. 286.

† *Brit. Jour. Derm.*, vol. vi. (1894), p. 80.

time in France by Hardy, Besnier, Leloir, Dubreuilh, Feulard,* etc., in regiments, ascribed to the use of the "tondeuse," or hair-clipper, in a fire brigade in Paris, etc., and the belief in a contagious form of alopecia areata is firmly rooted there. In England Hutchinson and myself are the chief apostles of the creed, but our disciples are few and often half-hearted. In Germany and America the belief in contagion in one form or another is on the increase. Of course it is not contended that it is readily contagious like ringworm, only that under favorable circumstances it may be communicated from person to person.

In a certain number of cases a relationship to tinea tonsurans can be demonstrated. Hutchinson believes that in alopecia areata in adults ringworm in childhood has been an antecedent. Ringworm, however, is so common a disease that its existence at some time prior to the alopecia areata would not prove much. It can, however, be shown that in those countries, like France and England, where tinea tonsurans is most frequent, so also is alopecia areata.

Instances in which adults who have been in contact with ringworm have soon after developed alopecia areata are not rare, while in children such a sequence is comparatively common. Then I have repeatedly seen cases of ordinary ringworm of the head with characteristic bent hairs, which, after being treated for some time, change into smooth, bald spots with the straight (!) hairs of alopecia areata at the border. That smooth, bald spots occur *ab initio* which it is acknowledged are of the nature of ringworm, even by ardent advocates of the universal application of the neurotic theory, is an acknowledged fact. In one family, in which several were attacked, there was a strong reason to believe it was originally contracted from a horse with a ringworm. In some of this class of cases the patches are very small, from a hemp seed to a large pea in size, while in others they are of the ordinary size and aspect of

* Feulard stated, at the Dermatological Congress of 1892, that in ten months, ending in May, 1892, there was an average of 3.3 out of every 1000 men in the army affected with pelade, and the numbers were greatest in the great centers, and culminated in 10.6 per 1000 in Paris. A patient of mine, a volunteer, with typical alopecia areata, stated that during his month's training, nine men in his company were affected in the same way as himself, and attributed it to the use of a hair-clipper.

alopecia areata. A lady nurse, aged thirty-five, had tinea tonsurans at the nape just where the hair commences. I got her apparently well with some difficulty, and a month or two later she came with a patch of alopecia areata on the temple. Another lady, about thirty, came with a single patch of alopecia areata, which she had noticed two days. She wanted to know if it was ringworm, as she had recently been in contact, though not very closely, with a child affected with that disease.

It may be said that these are the cases we all recognize as the bald form of tinea tonsurans. Without denying this I will only remark that they are often absolutely indistinguishable from alopecia areata, possessing the straight (!) hairs of that affection and not the bent and twisted ones of ordinary tinea tonsurans. Moreover, recognizable ringworm in the adult is infinitely more rare than the class of cases above described.

Excluding cases of the alopecia neurotica group ninety per cent. of all the rest are in apparently perfect health; and of the other ten per cent. in my cases three per cent. only had headaches and neuralgia, and in the remainder there were only complaints of trivial importance. I have, however, seen cases in which antecedent influenza may have had an etiological relationship.

The skin eruptions associated with 250 of my cases of alopecia areata were single instances of eruptions which could not be regarded as otherwise than accidental. An exception may be made for leuko- and melanodermia. This association has been noted by McCall Anderson, Thibierge, Senator, Feulard, myself, etc., and has already been discussed.

Without denying the possibility of there being cases apparently referable to Class III., but which may be neurotic in origin, they are certainly few in number.

Pathology.—This may be summed up as follows: There are tropho-neurotic and parasitic forms of baldness mixed up under the title of alopecia areata. No one would dispute that my first two classes are tropho-neuroses. It is also scarcely possible to dispute that there is a parasitic form, but this, except in France, is only just being grudgingly admitted by many dermatologists. But while I believe that this form includes all the ordinary cases of the disease, this is not generally accepted yet; and the tropho-neurotic theory is still largely supported,

in spite of the fact that, if this was always a neurosis, and that, too, of a degenerative kind, it would be unparalleled among all other neuroses that it should be—first, a very common disease; secondly, most common in childhood and in the prime of life, and very rare after fifty; thirdly, most common in males; fourthly, the patients in a very large proportion of cases are strong and vigorous in every shape and way, and do not show any other forms of neurosis; moreover, the majority of those who do have other neuroses, or give evidence of a possible neurotic exciting cause, have only the most common forms of neurosis which would be found in a large proportion in almost any form of common diseases or ailment. Further, there is never a demonstrable nerve distribution, except in the small traumatic group of Class II. In favor of a neurotic origin is the fact that baldness, both diffuse and in patches, may undoubtedly arise from a nerve disturbance, though the number of cases in which this can be proved or even rendered probable is very small, and in only a small minority is there corroborative evidence, such as concomitant migraine, neuralgia, antecedent influenza, worry, anxiety, leukodermia, and occasionally other nerve troubles. Only as regards leukodermia is there any strong probability that there is an etiological connection.

I do not assert that there are no neurotic cases other than those of the first two classes and the leukodermic cases; but that, if there are such cases, they form a very small proportion, and it is probable that they will not show the (!) hairs which characterize the rest of the class which I consider represents true alopecia areata.

There still remains for discussion the important point: Granting that there is a parasite, what is the nature of the organism? Thin, Von Sehlen, and Robinson ascribe the disease to a micrococcus; Vaillard and Vincent also found a coccus in an epidemic outbreak among soldiers. Unna describes a very small, plump bacillus. Sabouraud recently has come to the conclusion that the same bacillus which produces seborrheic alopecia produces alopecia areata. The clinical difficulties in the unreserved acceptance of Sabouraud's theory are many and obvious; moreover, he expressly says that alopecia areata due to the seborrheic bacillus only occurs after puberty. What is to explain the forty per cent. of cases which occur under fifteen

years of age? Very few of them are ophiasis cases. Personally, while admitting that there are cases of bald patches in connection with seborrhea, from clinical observation they appear to be in only a very moderate proportion, and many of them certainly occur in childhood. The strongest point in his view is that a filtered culture of the seborrheic bacillus injected into a rabbit produced total loss of hair; but he himself does not now consider this as valid evidence. This opens up possibilities that toxins of more than one kind will produce baldness. There is, however, another relationship which is equally important and requires investigation.

In my original paper, and more briefly here, I have endeavored to show on clinical grounds that there is a relationship between alopecia areata and tinea tonsurans—a view arrived at independently by Hutchinson. It is worthy of notice that alopecia areata is most common where tinea tonsurans is most rife, and it is also instructive to observe that the neurotic theory is most strongly held in those countries, such as Germany and America, in which both scalp ringworm and alopecia areata are comparatively rare. In childhood the two forms of disease can be shown to be interchangeable, while in adults we only see bald patches arising either after contact with the ordinary tinea tonsurans, or from cases similar to itself. May it not be, therefore, that alopecia areata in adults corresponds with the generally admitted bald tinea tonsurans of childhood? This would account for the otherwise curious fact that while ringworm of the head is so common in children it disappears after puberty; and may this not be because the hair alters in its consistence,* and the microbe is no longer able to penetrate into its substance, but, passing down between the root sheaths, separates the hair from its nutritive supply, and so leads to its atrophy and gradual extrusion? Or, again, it may be that the action of the ringworm fungus is not merely mechanical, and that it produces something inimical to the life of the hair or its papilla. That there is also atrophy, either primary or secondary, of the hair bulb and the tissues round, is clinically and microscopically evident to all, in the shrunken hair roots,

* That there is nothing in the mere fact of adult age against the invasion of the fungus is shown in the frequency of tinea in the soft beard hairs of man.

the thinned scalp, its diminished sensitiveness to irritants, sometimes even to touch, and the deficiency in pigment.

Anatomy.—The anatomy of the affected scalp has been examined by Jamieson, Vincent Harris, myself, Robinson of New York, Giovannini, Unna, and others. Unna* is more in accordance with Harris and Robinson.

Jamieson removed skin from the living subject in a case of two years' duration, and the results were entirely negative, both for tissue changes in or around the hair follicle, as had been described by Michelson, and as to the presence of a fungus. In Duckworth's case, examined by V. Harris, the hair follicles and sebaceous glands were atrophied, and there

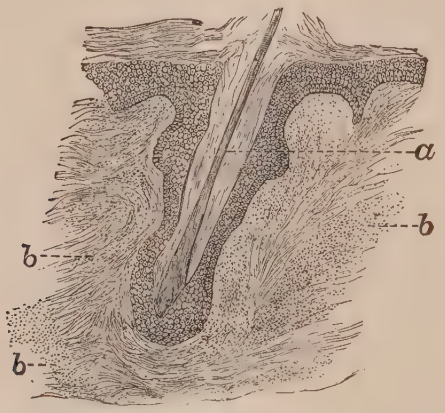


Fig. 86.—Section of scalp in alopecia areata. Obj. $\frac{4}{10}$, ocul. 2 in. *a*, lanugo hair in dilated follicle; *b*, *b*, *b*, masses of round cells.

was considerable increase of fibrous tissue round the follicle, and infiltration of the outer root sheath with a new round-cell growth; the hair follicles were beset with nuclei, and there was an inflammatory cell infiltration in the middle of the corium, extending mainly along the vessels. No parasite was found. My own observations were made from a patch which had existed five years in a man of forty. There was a scanty lanugo growth present here and there. Microscopically, there was atrophy of all parts of the hair follicles, many of which were considerably dilated, and contained only fragments of hairy substance; in others, the follicle was shrunken, and contained small hairs. The sebaceous glands (unlike Duckworth's case) appeared abnormally large, or at least not atrophied, and broken up into very distinct lobes by fibrous septa. As in his case, there was abundant round-cell infiltration of the outer root sheath, and all round the follicles as far down as the sweat coil, which was unaffected (Fig. 86). This cell growth was limited to the

* Unna's "Histopathology" gives a critical *résumé* to date, p. 1090.

neighborhood of the follicle in the deeper part of the corium, but extended horizontally in the papillary layer for a considerable distance from it. In one dilated follicle there were round, sporelike bodies; but, as the orifice was quite patent, this might have been accidental. These observations, while they indicate the trophic changes undoubtedly present, may be due to pressure atrophy from the presumably inflammatory cell infiltration and increased fibrous tissue, and do not enable a conclusion to be formed as to the nature of the exciting cause. At the American Medical Congress in 1887, Robinson of New York showed sections from alopecia areata which had existed only a week, and found normal epidermis, signs of inflammation in the corium, round-cell collection in the subpapillary layer, cellular infiltration with round cells, dilated blood-vessels, and small arteries containing fibrous coagula.* The lymph channels in the corium were enormously dilated, and contained also a fibrous coagulum. The sebaceous and sweat glands were unaffected. In a six months' case the changes in the papillary layer were greatest. In a case which had lasted several years there was atrophy of all the structures except the vessel walls. He ascribes the sudden falling off of the hair to the thickening of the walls and coagula in the vessels of the affected area. The cause of all this he ascribes to micro-organisms, as described by Von Sehlen, but they were not only in the hair follicles, but in the lymph spaces of the corium, and consist of diplococci and cocci in masses, colonies, and lines, and in rows in the lymph spaces.

S. Giovannini † has examined skin from no less than twenty cases in various stages. His observations show extensive perivascular infiltration of leukocytes, especially at the lower part of the follicle and in the circular connective tissue layer, and thence making their way between the cells of the matrix and internal root sheath, and leading to degeneration of those cells, disappearance of pigment, and often of fracture of the hair shaft in the follicle. Destruction of the hair bulb, neck of the follicle, and internal root sheath follows, the hair falls out, and there is more or less atrophy of the whole follicle, and sometimes atresia of it. If a new hair is formed, it undergoes the same sort of regressive changes, and falls out before it is mature. In old-standing cases the sebaceous glands atrophy, and in rare cases the sweat glands undergo colloid transformation. According to Giovannini, therefore, the whole process is the result of a deep folliculitis, but he throws no light on the cause of the inflammation. He confirms the observations of Harris and myself for advanced cases, and states that the infiltration of leukocytes precedes the fall of the hair, but this Unna disputes.

Diagnosis.—The diagnosis of the ordinary form of alopecia areata rarely presents any difficulty. The circular patches or bands of perfectly bald, smooth, white skin, with, at the beginning, a few short, club-shaped hair stumps at the margin, which

* *New York Med. Record*, September 17, 1887, p. 402.

† *Ann. de Derm. et de Syph.* vol. ii. (1891), p. 921, copiously illustrated.

come out easily, can scarcely be mistaken for *ringworm in its ordinary form,* in which the loss of hair is only comparative, the surface scaly, and the hair stumps all over the affected area bent, broken, and twisted, and extracted with pain and difficulty, or breaking off at the attempt. Moreover, in these stumps, the fungous elements are always easily demonstrable, while in those of alopecia areata they are never to be found in short hairs.

In megalosporon ringworm the stumps are fewer and the baldness therefore more conspicuous, but there is rarely any difficulty in finding some characteristic spore-laden stumps. Even when the stumps are broken off short, level with the skin, so as to show only a dark dot, a condition sometimes seen in alopecia areata, the fungus is easily found in the stumps of the former, never in those of the latter.

In my experience the presence of (!) hairs distinguishes the parasitic class from the indisputably neurotic forms. At the same time there is no theoretical reason why they should not be present, as they are only atrophied stumps. Moreover, in the first class, the universal distribution, the rapid development, and that not necessarily in patches, the frequent involvement of the nails, and the history of injury or mental shock, are the most noteworthy distinctions. In the second class the unilateral distribution, the small number of patches, even if there is more than one, the absence of tendency to spread after the first week or two, and the antecedent injury, neuralgia, or other neuritic conditions, are the leading features; while in alopecia cicatrisata, the smallness of the patches, the deep atrophic depressions compared to the slight atrophy of alopecia areata, the permanence of the baldness, slowly progressive character of the patches, the loosened hairs with swollen root sheaths and possible involvement of the nails, seldom leave room for doubt.

Bald patches very like those of alopecia areata occasionally occur in secondary syphilis, but are easily distinguished by the presence of other symptoms of syphilis, and rapid recovery under specific treatment.

Bald patches after prolonged exposure of the scalp to the Röntgen rays have also been recorded, but the baldness was only temporary (*vide* Hirsuties).

The seborrheic class, as I have described it, is distinguishable

by the pronounced seborrheic scurf, and the fact that the patches themselves are usually somewhat scurfy, not having the billiard-ball smoothness of ordinary alopecia areata.

Prognosis.—If the patient is young and the disease in patches, recovery may be predicted in nearly all cases, in from three months to two years. In persons past forty the result becomes less and less certain as age advances, though even then there is recovery in a fair number. When the disease has gone on until the whole scalp is bare the prognosis depends on the time it has been so, and on the presence of new downy hairs which do not fall out after a short stay. It is bad, when there has been no attempt at restoration after several months or years, if the scalp looks very smooth, the orifices of the hair follicles being scarcely visible, and the skin lax and atrophied; but restoration sometimes takes place even after total alopecia has existed for several years (sixteen, Michelson).

The prognosis is very bad for most of the cases in which the hair has fallen out very rapidly and absolutely all over the body and head in the course of a week or two; but a few recover. It is good for the local or neurotic form, though the hair on the affected area not infrequently remains white.

It is always good for any seborrheic form. The band form and all patches about the nape make a tardy recovery, as compared with patches higher up.

Treatment.—Internal remedies have very little, if any, effect. Arsenic, nux vomica, iron, the mineral acids, and various nervine tonics, have their advocates, but I have never seen any good that I could trace to their use. No doubt if the patient's health requires a tonic or other treatment, independently of the alopecia areata, it is wise and right to give it. On the strength of the restoration of the hair, in a case of myxedema, in which ʒj of the tincture of jaborandi was given three times a day for some time, I have tried it in several alopecia areata cases, the doses commencing at ♏x three times a day, and gradually increasing as tolerance was established, as at first it is apt to cause headache and even nausea; but I have not had any decisive evidence of its success. I have, however, thought that pilocarpin nitrate one-eighth to one-quarter of a grain at bedtime by the mouth has been of service. The patient should wear a flannel nightdress. As the discomfort of being in a bath of

perspiration every night is so great it should only be tried in cases of complete alopecia of the scalp.

Where opportunity offers pilocarpin hypodermically injected into the scalp in the dose of about one-thirtieth of a grain of the hydrochlorate, or just enough to produce local sweating, is worthy of a trial. In a few of my cases it has appeared to be decidedly beneficial, and Morris has had a very successful case. Thyroid extract has not justified the recommendation it has received in some quarters.

When the bald areas have ceased to extend, but the new hair does not grow or does so very feebly, change to a bracing air, such as the seaside or the mountains, or even into the country from a town, will often determine a more vigorous growth.

Locally, strong stimulant applications offer the best chance, and all means which produce a better blood-flow through the scalp. One of the best is chrysarobin ℥j to ℥j of lard, or ℥ss to ℥j of lanolin and oil, well rubbed in night and morning. This has seemed to be one of the best remedies in my hands; but it has the well-known drawback of sometimes producing erythema, with swelling of the face, even when applied only to the scalp; it should always be restricted to the posterior portion, therefore, and the patient should be warned of this possibility, so that he may not be alarmed at what he is apt to think is erysipelas. The staining of the skin and hair and of all linen with which it comes in contact are further drawbacks. This drug, being both a powerful parasiticide as well as a penetrating stimulant, fits either theory. A cleaner and less disagreeable application is turpentine. The ol. pini sylvestris is the nicer form, one ounce with hyd. perchlor. gr. 2 or 4 dissolved in alcohol, while ext. capsici ℥ss, or more, may be added where the turpentine alone exerts too little effect. It deteriorates after being made about a week, probably oxychlorid of mercury is formed; at all events, a white precipitate is thrown down, and the fluid is less stimulating. Cantharides is a favorite application with many, either as a lotion (formulæ for which may be seen at the end), or with a view of blistering the part. Blistering the patches is often useful when the disease has ceased to spread, and at the beginning also, at the spreading edge; it should be repeated from time to time, as the patient can bear it. Bulkley prefers the application of strong carbolic

acid; to recent and spreading patches it may be applied freely with wool fastened on a match, and I can bear him out that it acts only as a superficial escharotic; the skin is immediately whitened, and the epidermis peels off in a few days, but no sore or deep destruction ensues. I cannot say, however, that the beneficial results have been very striking, and I now use it only for quite recent small patches, and think it sometimes stops further extension; but if Giovannini's observations are correct, and there is perifollicular inflammation at a very early stage, it becomes a question as to whether we are not going on the wrong tack, and that it would be wiser to use in the early stage mild parasiticide applications which do not excite inflammation, lest we should unwittingly be adding fuel to the fire. I cannot, however, say that I have ever seen any harm ensue from the stimulating plan. Faradizing the scalp is also useful at the late stage, a double-tufted wire brush,* to which both poles are connected, being used as the electrode, and the scalp is brushed until the skin is well reddened. Gaiffe's and Thistleton's small coils are suitable instruments for the patient's own use.

Although shaving the scalp greatly facilitates the application of remedies, I am strongly opposed to it, as it necessitates wearing a wig, and the springs of this by their pressure on the scalp impede the circulation and greatly retard recovery, and sometimes prevent it altogether where the springs actually press. There is also no advantage in keeping the hair short, and it makes it more difficult to conceal the bald patches. There is, however, a great advantage in pulling out the loose hair round the patch, as it much facilitates the application of remedies to check extension of the disease, and the patient can be assured that it will fall out of itself a little later. Repeated shaving round the patch is another means to the same end.

Thin, acting on the parasitic theory, has revived the old practice of rubbing in sulphur ointment, for which he claims uniformly successful results, and has published fifteen consecutive cases so treated with recovery, the ointment to be well rubbed in round as well as on the patches. Sabouraud also advocates it. I regret to say it has not been very successful in my hands; ʒj each of sulphur, resorcin, and thymol to the ʒj is a formula

*I have had a cheap form of brush made for me by Thistleton.

I often use. As many cases are long-continued, and improvement is at the best only slow, it is well to have alternative remedies. Hebra and Kaposi use the expressed oil of mace; liq. ammoniæ by itself, sponged in, or in the form of a liniment with equal parts of olive oil, is a good remedy, and Wilson adds four times as much spiritus rosmarini as ammonia. He also advocates equal parts of liniments of camphor, ammonia, chloroform, and aconite. The shampooing necessary to rub in these liniments has its use. Tannin, nux vomica tincture, pepper, oil of mustard, various mercurial preparations, veratria, a legion of other remedies, have their respective champions and testify to the obstinate character of many of the cases. The practice of those who believe in the universal application of the neurotic theory differs very little from that of others; the stimulating remedies are nearly all microbicide also. In all cases the patient should be enjoined to persevere diligently, however disheartening the slow progress may be.

ALOPECIA CICATRISATA.

Synonyms.—Cicatricial alopecia; Alopécie cicatricielle (Besnier); Pseudo-pelade (Brocq); Alopecia circumscripta seu orbicularis (Neumann).

Definition.—An inflammatory disease of the scalp producing destruction of hair follicles, at first in small depressed cicatricial areas, which often coalesce into large irregular areas.

Neumann was the first to describe this condition, but imperfectly, as he only saw an early stage. Brocq (first in 1885) and Besnier have independently described it more clearly and accurately. It is a rare disease, but a good many cases have come under my notice. It first attracts attention as elongated or round lentil- to pea-sized and larger concave (occasionally convex) bare cicatricial spots with diminished sensibility. They increase in number and to some degree in size, especially on the vertex, where they often coalesce, forming irregular elongated areas, into which the healthy hair projects like irregular serrations.* Small tufts of hair are also seen standing out like small

* In many cases this is a very striking feature, and at one time, thinking I had discovered a new form of disease, I labeled these cases "alopecia serrata."

oases. They are apparently healthy, but when pulled they come out with very slight traction, and the root sheath is attached and swollen from the imbibition of fluid. The surface of the part affected is generally quite white, but sometimes pink or a very narrow ring of redness surrounds the most affected hairs, or there may be a slight powdery scaliness where the hair is inserted, but most of the hairs look quite normal until they are pulled out. There is never any suppuration at the hair follicles, unless Quinquaud's disease is a variant of it. The disease, unless arrested by treatment, goes on for many years, and ultimately large areas of the scalp are permanently denuded of hair, for there is never any restoration on the bare spot, except sometimes at the borders of a patch. There are no (!) stumps, but occasionally one or two stumps may be found buried nearly to the end, and when extracted they are found to have no attachment, have no root sheath, and under the microscope the root-end sometimes has a concavity like the mold of the hair papillæ. The nails are not affected, as a rule, but I have seen them slightly pitted, and, as in the following case, profoundly affected.

A gentleman, aged thirty-five, in robust health, and with no history of antecedent worry, syphilis, or other serious illness, had a large number of bare, depressed, pea-sized spots on the scalp, chiefly at the vertex; the hair round them was loose, and came out with the sheaths attached, and there were no (!) hairs. All the nails of the fingers and toes underwent the following changes: they first separated from their bed, then became of a dirty yellow color, and finally thickened without splitting; the surface remained smooth on the finger and big toe nails, but in those of the smaller toes the free end was thick, yellow, and everted, while the proximal part was thinned, rough, and striated, but not discolored, a deep furrow separating the thin from the thick part. In a man of forty-five, who had had the disease six months, the bald patches were very numerous on the vertex and began as irregular spots. The largest compound area was as large as the palm, but narrower, and with tufts of hair scattered over it. Some of the bald areas were slightly reddened. Pernet stained some of the root sheaths for micro-organisms, but none were found, and this has been the experience of others; nevertheless there can be little doubt but

that it is a schizomycetic disease setting up a mild degree of inflammation which destroys the hair papilla.

Diagnosis.—These cases are sometimes confused with alopecia areata, but the irregular outline of the larger patches, the tufts of normal-looking hair on the bald areas, the depressed cicatricial surface, the absence of the (!) stumps of alopecia areata, and the fact that the hair is never restored, are distinguishing features. The swollen root sheaths suggest an inflammatory origin. Besnier, however, has met with two employees in the same firm, in whom one had alopecia areata of the beard while the other had pronounced cicatricial alopecia. Also the case of a woman with cicatricial alopecia without folliculitis, and shortly after in a close relation ordinary alopecia areata. Brocq has also seen a case which he at first thought was an alopecia areata, then that it was cicatricial, but the patient said the hair had regrown on some precisely similar patches, but not for several years. Both he and Besnier, therefore, have doubts whether the disease is a fundamentally distinct one from alopecia areata.

The *treatment* I have found most successful is to pull out the loosened hairs and rub either a biniodid of mercury ointment two grains to the ounce, or one of sulphur and resorcin of each gr. xx to the ounce, but it takes a long time to stop the process. Besnier affirms that cases sometimes get well of themselves.

ULERYTHEMA OPHRYOGENES.

Deriv.—*οὐλή*, a cicatrix; *ἐρύθημα*, redness; *ὀφρύς*, the eyebrows.

Ulerythema is a term proposed by Unna to designate affections characterized by inflammatory redness followed by scarring (*οὐλή*, a cicatrix; *ἐρύθημα*, redness). If he had succeeded in establishing it, it would have included lupus erythematosus, the so-called "lupoid sycosis," and another acneiform affection, but fortunately it has only been retained for the affection described by Taenzer.*

This affection was first described by Taenzer in 1885, from six cases, the first three in one family. It commences in earliest infancy by redness of the skin of the eyebrows, where it persists throughout life; later it invades the neighboring parts,

* *Monatsh. f. prakt. Derm.*, 1885, No. 5.

principally the face, the scalp, and the nose, rarely the arm. At first it looks like a lichen pilaris developed on a slightly red base, then at some point, in severe cases, there arises a marked but very superficial inflammation of the skin, and its effect on the hair follicles is to produce in parts a slow growth of vigorous hairs, generally in tufts. One then sometimes observes the symptoms of a non-suppurating folliculitis, while the intermediate skin becomes atrophic.

The ultimate result of this slow inflammatory process in the only case he was able to observe, consisted in a total alopecia and atrophy of the scalp, analogous to that of a long-standing favus. Taenzer thought that the disease was not very rare, but that it was overlooked because it was only when it invaded the scalp that it produced such marked and characteristic symptoms as to show it was no ordinary malady. Dubreuilh considers it to be a keratosis pilaris, and describes the presence of minute hard papules, pierced by an atrophied hair. It begins on the outer side of the eyebrow, and advances in the course of years to the inner end; an atrophic scar with minute telangiectases is left.

The *treatment* Dubreuilh recommends is cod-liver oil, iron, and arsenic, and good hygiene. *Locally*, resorcin soap and inunction of five per cent. salicylic acid with glycerin; but the disease is very rebellious to treatment.

FOLLICULITIS.

Inflammation of the hair follicle—or, as it more frequently really is, perifolliculitis—is very common in some form or other. It varies greatly in degree, being sometimes clinically but little more than congestion, at others so severe as to produce suppurative destruction of the follicle. Some of the milder forms of inflammation have already been discussed under the group of lichens, others under eczema and pityriasis rubra pilaris, ringworm,* and others under acne varioliformis. They are so diverse in their etiology, symptomatology, and pathology, and of many forms we know so little, that satisfactory classification is at present not practicable, though a very praiseworthy at-

* Leloir's "Conglomerative Pustular Perifolliculitis" has been proved by Sabouraud to be due to a trichophyton.

tempt has been made by Brocq * in this direction. Here only three forms will be discussed: the common sycosis and the two rare affections, folliculitis decalvans and dermatitis papillaris capillitii. There is, however, as will be shown in discussing dermatitis papillaris capillitii, strong reason for believing that the three affections are closely related, and own a common origin, viz., the staphylococcus aureus and albus, the different clinical manifestations being probably a matter of locality for the most part. As this is not yet generally admitted—indeed, I am not aware that the theory has been advanced before, except as regards the two last diseases—I have still considered them separately.

SYCOSIS.†

Deriv.—*σύκωσις*, figlike, from *σῦκον*, a fig.

Synonyms.—Acne mentagra; Ficosis; Lichen menti; Folliculitis Barbæ; Ulerythema sycosiforme (Unna); *Fr.*, Sycosis non-parasitaire; *Ger.*, Bartfinne.

Definition.—Chronic primary folliculitis of the hairy parts of the face, especially of the beard, due to microbic infection.

Formerly sycosis was divided into non-parasitic and parasitic sycosis, the latter, or tinea sycosis, representing the inflammation excited by the trichophyton fungus. Modern research has, however, shown that the so-called non-parasitic form is also due to an organism, but belonging to the schizomycetes instead of to the hyphomycetes, and we have, therefore, schizomycetic and hyphomycetic sycosis, or, as Unna puts it, **coccogenic** and **hyphogenic** sycosis, to which he adds the bacillogenic form of Tommasoli. Only the coccogenic form is considered here, and this form is intended when sycosis is spoken of without qualification. Tinea sycosis is described with the other fungous diseases.

Sycosis is not a common disease, one in three hundred being the proportion according to Hebra, but in my experience one

* Second edition, 1892; "Folliculities et Périfolliculites," p. 283.

† Author's Atlas, Plate LXXXVIII., Figs. 2 and 3, represent a mild form affecting the whisker and a similar condition of the eyebrow.

in one hundred and fifty is nearer the mark. The name is conventionally limited to primary folliculitis of the beard, whiskers, or mustache; but it may also attack the eyebrows, the lashes, or vibrissæ of the nose; and a precisely similar inflammation may occur in the coarse hairs of the axillæ and pubes of both sexes; on the scalp, however, folliculitis is generally secondary to an eczematous inflammation, which clears up in the skin between the follicles, leaving them still inflamed, but sometimes an ordinary coccogenic sycosis extends directly from the whiskers, and I have seen it over the whole vertex in a seborrheically bald man, but not extending beyond the seborrheic region, and attacking the fine regrowth of the seborrhea and not the more vigorous sidegrowth.

Symptoms.—Sycosis varies greatly in extent and severity. Papules, nodules, or pustules may be present, and each is traversed by a hair or hairs in the center. Beginning commonly in the beard, acneiform, hemispherical papules or nodules, soon developing into pustules, form round the hairs. At first only few and isolated they gradually increase in number and aggregation; and while, on the one hand, the disease may be limited to a single patch, in other cases, by the junction of multiple foci and peripheral accretion, wide areas are involved. There is, however, much less tendency to the multiplication of foci in this than in hyphogenic sycosis, the extension taking place, in the main, peripherally.

The hairs are at first firmly seated, are pulled out with pain and difficulty, and even in the papular stage the root sheaths, on removal, are seen to be swollen by serum imbibition quite down to the end. As the suppuration becomes more free they are loosened and easily removed. In cases of moderate severity the pus may dry into closely adherent, thin, brown or yellow crusts, each spitted, so to speak, by its central hair; while in severe cases the pustules are so quickly crowded that they colesce into infiltrations, which may fungate,* and are covered with purulent crusts. When these are removed the hairs are left standing in shallow pits produced by the loss of their root sheaths, or when the process goes a little further the follicle

*It is this condition that first earned for it the name of sycosis, from its resemblance to the inside of a fig. It is more common in the tinea form.

is destroyed, the hair falls out, and cicatrization and permanent loss of hair ensue. If untreated the process invades fresh follicles, until the whole of the hairy part of the face is affected, but it never travels on to the glabrous skin. In severe cases it may reach all over in weeks or months; in others of less intensity the whole extent is not traveled over for a long time, the process sometimes lasting, with remissions and exacerbations, from ten to thirty years. In these chronic cases there is a general infiltration and redness, partially covered with small white scales, with a varying number of pustules interspersed, according to whether there is a remission in, or renewal of, the activity of the inflammation. There is then always more or less scarring from previous attacks, and occasionally keloid ensues in the cicatrices.

Besides the lesions that have been described swellings the size of a pea to a finger-nail are often seen here and there. They are soft and fluctuating, and when the hairs in them are removed, give exit to pus by the numerous openings produced by the epilation. The hairs may also come out spontaneously previously to the nodule breaking down. Even when the disease is apparently cured relapses are frequent, especially when the beard has been allowed to grow too soon.

Variations.—In old-standing cases the intensity of the inflammation sometimes subsides, and there is only left a chronic, red patch more or less covered with white scales and an occasional pustule from time to time. At the commencement of the disease also mild cases of this type may be sometimes seen, but usually the pustules are more numerous. As will be described under the pathology two different organisms may produce similar eruptions of this mild type.

Milton more than thirty years ago applied the term **lupoid sycosis** to a variety of scar-leaving folliculitis, which generally begins at the upper part of the whiskers and slowly travels downwards with a narrow erythematous margin, with marked infiltration, followed by cicatricial atrophy and destruction of the hair follicles. The lesions may be papular, vesicular, or pustular, or when the intensity of the inflammation has subsided, only erythematous and scaly, with more or less infiltration. After a time the process comes to a standstill on one side, but may start again on the others. Brocq, evidently unaware

of Milton's meager description, has described a similar condition as *sycosis lupoïde*, and Unna as *ulerythema sycosiforme*. Unna lays stress on the primary vesicular character of the affection, the sharp limitation of the interfollicular erythema from the healthy parts, and the superficiality, chronicity, and rebelliousness of the inflammation and the final patchy character of the scar formation, as distinguishing characters from ordinary sycosis.

Etiology.—The disease being limited to the beard and whiskers, obviously only adult males are liable to it, but the analogous folliculitis of other regions may occur in adults of both sexes; but it is never so obstinate as in the face. It is common on the upper lip in those who are subject to nasal catarrh, doubtless from pus contamination. Brooke contends that it is contagious, and frequently conveyed by the shaving brush, especially by those barbers who have to do with the unwashed classes. My own impression is that it is certainly more frequent in those who allow the beard to grow than in those who shave, and I agree with Brooke that it may be communicated by barbers, but more frequently they convey a tinea sycosis, which in mild forms is very common in my opinion, the idea that it is rare having arisen from restricting the term to the more severe kerion forms of it. In most cases impetigo contagiosa only is conveyed, but if this is not cured soon the pus cocci get into the follicles and produce sycosis.

Pathology.—The disease, as already stated, is an inflammation in and around the follicles. The way in which it spreads from follicle to follicle suggests the presence of a micro-organism, but Bockhart was the first to demonstrate that pus cocci (staphylococcus aureus et albus), by their presence in and round the follicles, could and did excite a sycosis of the characters described; hence the appropriateness of Unna's name, coccogenic, as opposed to hyphogenic (tinea) sycosis. Tommasoli has also obtained a special organism, which he and Unna have called bacillus sycosiferus fœtidus, in a case which appeared to be ordinary coccogenic sycosis of mild type. Tommasoli proved his point by obtaining typical sycosis by inoculating pure cultures on his own skin and that of rabbits.

The anatomy has been investigated by Wertheim, who showed that each follicle was converted into a small abscess,

and Robinson * of New York examined skin from the living subject, and found that primarily the inflammation was perifollicular, exactly like other vascular connective tissue inflammations. Thence serum and even the other products of inflammation penetrate the follicle, whose cell elements swell and disintegrate. The pus infiltration is greatest at the fundus, decreasing from thence upwards. The papilla is comparatively seldom destroyed. Pus reaches the surface by breaking through the epidermis round the follicle; and when the hair is pulled out the whole cavity is seen to be lined with pus cells. The sebaceous glands are affected after the hair follicle, while the sweat glands are only occasionally involved.

Unna † gives a long description of the process too elaborate for quotation. He describes four stages, two superficial and two infiltrating. The first is an impetigo of the neck of the follicle; the second is a nodular perifolliculitis of the follicle-neck, consisting of an inflammatory, firm, painful nodule; the third is that of perifollicular abscess, but affecting at first only the side of the follicle. Up to the fourth stage restitution is possible, but in this final stage of follicular abscess there is suppuration of the whole follicle, with consequent loss of hair and the production of a scar.

Diagnosis.—A chronic inflammatory disease, limited to the hairy region of the face, and beginning in the follicles, can only be sycosis. The diseases most like it are eczema, tinea sycosis, and tertiary syphilis.

Eczema resembles the slighter and more chronic cases of sycosis, but may be distinguished by the following points. The inflammation is seldom exclusively in the hairy region in eczema throughout the whole course, though it may be so. When it comes first under observation a history or evidence of inflammation in the neighborhood is generally obtainable. The inflammation does not begin in the follicles, but in all parts of the cutis, and, at first, is more superficial than sycosis. This may be shown by pulling out a few hairs, when in some of them the root sheath is only swollen by serum imbibition at its upper part, while in sycosis it is always swollen to the end. The inflammation also seldom approaches in intensity that of severe

* *New York Med. Jour.*, August and September, 1877.

† "Histopathology," p. 373.

sycosis. When an eczema of these parts has lasted some time the inflammation clears up between the follicles, leaving them still inflamed. The two conditions then become indistinguishable, except that the history may show that this eczematous folliculitis is secondary to a more general inflammation, but the distinction at this stage is of no practical importance, as the local treatment would be the same.

Between sycosis and *tinea sycosis* the points of difference are: the tinea is more acute in its development, and frequently begins with a circinate, circumscribed, scaly patch, but subsequently the suppuration is very free; the affected part is lumpy from the numerous pustules and nodules; the hairs pull out easily and without pain, and their nutrition is affected early, so that they are brittle, dull, and even bent or twisted; multiple foci are much more common, and are seldom seen in the coccogenic form except in old cases. Such conditions should lead to microscopic examination, when the fungus can be discovered. Severe forms are much rarer than its coccogenic prototype, but slight degrees are more common.

Ulcerating tertiary syphilids may resemble severe sycosis. When the crusts are removed—and diagnosis without this is always liable to error—the ulceration is apparent and generally circinate in outline. The inflammation is not simply follicular, and evidence of past or present specific lesions elsewhere can generally be obtained.

The symptoms considered by Unna to differentiate lupoid sycosis or ulerythema sycosiforme have been given under that form of the disease.

Prognosis.—Sycosis is never dangerous, but often very obstinate and liable to recur. A guarded opinion as to *bona-fide* cure in old-standing cases should always be given, but considerable improvement can always be promised.

Treatment.—Internal treatment is advocated by some authors, chiefly tonics, cod-liver oil, the mineral acids, and strychnia; and Tilbury Fox thought highly of Donovan's solution where there was much infiltration. For my own part I regard sycosis as a local affection, in which local treatment is all that is necessary.

Shaving and epilation are most important preliminary measures, and if not practiced, either from the unwillingness of the

patient to part with his beard, or other reason, the treatment will be much less effective and more prolonged. Although the patient at first shrinks from the idea of shaving over such a sore surface, in moderate cases, if the hairs be first closely clipped, the crusts softened with pledgets of lint dipped in olive oil before removal, a skillful barber gives very little pain, and after the first time the patient does not mind it. In severe cases it is not necessary to shave over the worst part, as the hairs are loosened and can easily be pulled out; but in the moderate cases, after shaving, the hairs on the inflamed part may be allowed to grow for a day or two, and then they should be systematically epilated, clearing a quarter to half a square inch daily; but the process is undoubtedly painful. Not only should shaving be kept up during the treatment, but continued for at least twelve months after apparent cure or recurrence is probable. In very acute cases, after the part has been cleaned, soothing applications, such as the glycerin of the subacetate of lead 1 in 10, should be continuously applied on lint covered with oiled silk; 10 to 20 drops of carbolic acid to each ounce may sometimes be added with advantage; or an ointment of iodoform gr. 5 to ℥j; or europhen gr. 5 to gr. 10 may be substituted. Afterwards, or in cases of less severity, the applications that suit most cases are one or two per cent. of oleate of mercury; a weak sulphur ointment, about ℈j to the ℥j; or the diluted nitrate of mercury ointment: one or other of these is generally successful. Shaving with the Krankenheil Spring soap No. 3, or Calvert's carbolic shaving stick, and leaving the lather on at night, is a useful adjunct.

Whatever treatment is adopted, perseverance, with unremitting care, for a long period, is essential for a complete cure. The more heroic method recommended by Veiel of Cannstadt and other German authors—*e. g.*, Wilkinson's ointment (Hebra)—will rarely be submitted to in this country. Where there is much infiltration, as in very chronic cases, a small area at a time may be painted with liquor potassæ and washed off in half a minute and a zinc ointment applied. This is sometimes very effectual, but in the cases of long standing the best treatment is to put the patient under an anæsthetic and thoroughly scarify the whole diseased surface, then rub iodoform or one of its substitutes into the cuts, and after the bleeding has

stopped dress it with iodovaselin or boric acid ointment. Many months of tedious treatment may be saved and a better result obtained by this method.

Ehrmann's treatment is worth mentioning, on account of its ingenuity. He introduced pyoktanin into the diseased follicles by cataphoresis. The anode is soaked in a ten per cent. solution of methyl blue, then applied to the diseased surface, the kathode being held in the hand. Twenty milliampères was the strength of the current employed. The blue coloration of the hair follicles is a drawback, but the same method might be used for other medicaments. The most recent treatment is exposure to the Röntgen rays until the diseased hairs fall out; ten minutes' exposure of about three ampères with a six-inch tube at about six inches from the kathode. Ten or a dozen exposures are generally required.

DERMATITIS PAPILLARIS CAPILLITII.

Synonyms.—Acne keloid or Acné chéloïdique (Bazin); Sycosis nuchæ necrotisans (Ehrmann); Sycosis papillomateux and Sycosis framboesiformis (Hebra); *Ger.*, Nackenkeloid.

This disease is only placed here until its nosological position is better known.

Under this lengthy name Kaposi * described a very rare disease, which he said is not a sycosis framboesiformis,† as Hebra thought it to be, as it does not commence in the follicles, and has nothing to do with syphilis, but is an idiopathic inflammatory process, commencing on the hairy border on the back of the neck, and spreading upwards towards the vertex, to which it was confined in one case. My own observations, however, lead me to believe that Hebra was right in regarding it as a hair folliculitis.

Symptoms.—It begins as pin's-head-sized papules, at first isolated, but soon becoming thickly crowded together, and developing in the occipital region into enormously vascular papil-

* Kaposi, 2d ed., p. 485, and his Atlas of Skin Syphilis, Part III., Plate LXVI.

† Hebra's Atlas, Heft. x., Tafel 3, Fig. 1.

lomatous vegetations, two or three centimeters high, and made up of granulation tissue. They are crusted, bleed easily, and exude from between the papillæ a stinking secretion, while here and there, by the formation of intercurrent subcutaneous abscesses, they are partially undermined and destroyed. In the course of years they shrink, changing into a sclerotic connective tissue, and finally there is extensive atrophy of the hair follicles and baldness in some parts, and in others, tufts of hair projecting through the hypertrophied scar tissue **(acne keloid).** It is only in this final stage that cases have hitherto been recorded in this country, by Morrant Baker,* Roger Williams,† Eve,‡ and two cases have come under my own observation, as mentioned under keloid; probably this is always the outcome of antecedent pustular lesions. According to the man's statement, my first case was a sequel of boils. In my second case a tuft of hair pulled from the middle of the tumor, where there was sign of inflammation, was bathed in pus.

In 1897 I saw a man, æt. twenty, whose mother said he had had an eruption on the back of the head and neck as long as she could remember. When seen there was a patch in the occipital region, three and a half inches by two and a half, quite bare and cicatricial in the center; at the border for half an inch all round, extending into the hairy margin, was a folliculitis scabbed and pustular; each pustule was from a pin's head to a millet seed in size, with a hair in the center, and situated on a slightly raised red inflammatory base. There were a few scattered pustules for an inch or more beyond the patch. There was an indurated scar, half an inch by a quarter of an inch, in the right parietal region. At the nape, all along the hairy margin, there was an irregular band of disease, due to the same morbid process, but the inflammation was less acute, and there was evidently fibrous keloidal thickening round the hair follicles—in short, a developing "acne keloid." Above the band, but joining it, was a keloidal patch an inch in diameter with small tufts of hair coming out between the lobes of the growth, but there was still some slight crusting. Below the

* *Path. Trans.*, vol xxxiii. p. 367, with colored plate.

† Williams' case is in vol. xxxv. (1884), p. 397, with histological plate.

‡ *Illus. Med. News*, June 8, 1889, with colored plate. Fox and Heitzmann in America have also met with acne keloid.

band there was superficial scarring on the neck from destroyed hair follicles.

I have related this case in some detail because it illustrates two points. The occipital patch corresponds closely with the condition described by Quinquaud as "folliculitis decalvans," while the nape patches showed that "acne keloid" does develop from a pustular folliculitis, and although there was no frambesiform condition, that is admittedly not an essential feature. On the other hand it is an occasional feature in sycosis of the beard; and, indeed, Melle records a case from De Amicis' clinic in which an acne keloid was located in the submaxillary region. He also mentions cases extending to the occiput and vertex; according to him, also, it may affect any hairy part of the face. Ehrmann * has shown that in the nuchal affection the staphylococcus aureus and albus are probably the cause of the affection just as they are of coccogenic sycosis.

Kaposi identifies this disease with Alibert's pian ruboïde,† the case figured being that of a previously healthy young man in whom pustules suddenly appeared on the upper lip and vertex. Others soon followed, itched intensely, and either spontaneously or from scratching the affection spread rapidly all over the scalp, both lips, the ears, pubes, and genitals. There was profuse and offensive otorrhea and rhinorrhea; the scalp was swollen and covered with fungating, frambesiform vegetations, with sanious fetid discharge; and the patient died in six months from marasmus and colliquative diarrhea. Post-mortem the viscera were healthy, but there were large tumors on the sides of the larynx, and also on the palate and nasal fossæ. Alibert considers his case an extreme case of yaws, and although that view is not tenable, it certainly does not, in my opinion, quite accord with Kaposi's description of his disease, which is apparently limited to the hairy scalp, and does not appear to be dangerous to life. An interesting case of this class is one reported by Hervouet ‡ of Nantes, which began on the back of the vertex following a traumatism. In Payne's §

* *Archiv f. Derm u. Syph.*, Bd. xxxii., September, 1895.

† Atlas, 1814, Plate XXXV., case described p. 156, and post mortem, p. 164. Rayer copies a portion of this plate into his own Atlas, under the title of "Sycosis Capillitii."

‡ *Ann. de Derm. et de Syph.*, vol. iv. (1883), p. 421.

§ *Brit. Jour. Derm.*, vol. xi. (1899), p. 36.

case there was a frambesiform patch in the middle of the scalp resembling the above cases in some respects, but it recurred after excision, which throws doubt on its nature.

Treatment.—In the tumor stage excision is the only plan likely to be successful, and there is not the same tendency to recur as in most keloids. But in the granulomatous folliculitis stage I have found the best plan is erasion with a curette, the granulation tissue, fibrous thickening, or pustules being thoroughly scraped away, and the surface disinfected with iodoform or strong carbolic acid. Boric acid ointment is a good subsequent dressing. The case of the young man related above was successfully treated in this way. Ehrmann cured his case by electrolysis of the diseased hair follicles, but this would be very tedious treatment. The Röntgen rays would be preferable.

FOLLICULITIS DECALVANS.

Quinquaud * has described a chronic folliculitis of the hairy parts, especially of the scalp, which leads to a cicatricial alopecia. Lailler and his pupil Robert † have independently described the same affection under the title "acné décalvante." Cases of this kind have been hitherto confounded with alopecia areata, Quinquaud says, but this could only be with the cases I have described as "alopecia cicatrisata," and in this there is no pustular or papular folliculitis at the border.

The patches are about the size of a shilling, irregular in outline, and almost smooth and polished, but with some granular points at the periphery, and red points on the white, atrophied, cicatricially depressed surface. At the periphery are folliculitic lesions, pustular, papular, or simply erythematous. Histologically the changes were chiefly perifollicular, and, besides pus cocci, others in pairs and fours were found which Quinquaud regarded as special. The treatment Quinquaud recommends is to wash the head thoroughly, then for ten days paint tincture of iodin on and round the patches, and apply every morning a lotion of perchlorid of mercury gr. 1, biniodid of mercury gr. 1-6, alcohol ʒj, distilled water ʒj. This is of course

* *Musée, Hôpital St. Louis, Moulage* 1293.

† "Thèse de Paris," Steinheil, 1889, with photograph.

to stop the disease from spreading. The hair cannot be restored.

The disease appears to be intermediate in degree of inflammation between alopecia cicatrisata and dermatitis papillaris capillitii, but it is to the latter that I should attach it.

DEPILATING FOLLICULITIS OF THE LIMBS.

Arnozan in 1892 first published two cases of this affection, and Dubreuilh, in adding two other cases, has confirmed his observations.

In the above cases it was limited to the legs, knees, and thighs, chiefly the anterior and lower part of the latter, and with an exact symmetry.

The elementary lesion is a red papule from a millet seed to a pea in size, pierced by a hair in the center and sometimes surmounted by a pustule or crust. After several weeks the papule is slowly absorbed, replaced by a lenticular macule, at first violet red, then brown; the hair falls, and only a punctiform pigmented cicatrix is left.

These papules are aggregated into small plaques, which extend peripherally until they attain to patches several inches in diameter, bounded by an irregular zone of folliculitis in process of evolution. This zone is ill defined owing to the presence of isolated papules in the healthy skin on the outside, and on the inner side by isolated hairs attacked at a later period than the rest. Wherever the process has extended the part is deprived of hair and punctiformly scarred and pigmented.

The disease extends very slowly, is attended by very little discomfort, and may last for years. The patients have been middle-aged or elderly men without anything to suggest a cause for the malady. Dubreuilh examined two papules histologically, and found an embryonic infiltration compact and circumscribed, closely investing the hair follicles, and containing numerous giant cells. The follicle is reduced to an epithelial cord, and the neighboring derma is filled with mast cells, but has scarcely any signs of inflammation. Dubreuilh could not find any microbe in the lesions.

Hitherto its course has not been much influenced by treatment.

Folliculitis necrotica appears to be a very similar condition, affecting the trunk from the nape to the waist. Eddowes * has recorded a well-marked case. It is attended with a great deal of irritation.

TUBERCULOUS FOLLICULITIS.

Hallopeau,† Du Castel, and Feulard have described cases which they consider are due to tubercular toxins. They may be isolated or aggregated into patches, and may be considered as varieties of acne cachecticorum and scrofulosorum. They are frequently associated with lichen scrofulosorum, and almost constantly with other tuberculous manifestations. They may form round tuberculous gummata, and even be the starting-point of a lupus vulgaris. They have been produced by the old tuberculin injections. These forms of folliculitis are generally situated on the trunk and limbs, especially on the lower limbs.

They occur as papulo-pustules from a millet to a hemp seed in size, the reddened base extending beyond the moist apex, and sometimes there is a hemorrhagic areola (cachectic acne). They may in rare instances be aggregated into indurated patches in which the component elements are fused. They extend by the development of new pustules at the periphery, which form superficial ulcerations, or there may be pemphigoid bullæ at the spreading border. Another mode of extension is a raised border, which extends externally and subsides *pari passu* internally, and this so rapidly that it extends all over the back of the leg in a few weeks.

Histologically, Darier and Laffite only found the signs of a perifolliculitis, and regarded it, therefore, as a toxic process round the pilo-sebaceous apparatus.

D.—DISEASES OF THE NAILS.‡

The morbid changes observed in the nail substance are, except in the case of parasitic invasion, when the matrix is only

*Shown at the Dermatological Society of Great Britain and Ireland, *Brit. Jour. Derm.*, vol. xi. (1899), p. 168.

† The original references are in *Internat. Cong. of Derm. Trans.*, 1898, p. 413.

‡ *Literature.*—Author's Atlas, Plate XC., thirteen figures. Sydenham

secondarily affected, the direct or indirect result of diseased conditions of the matrix, which is subject to the same pathological conditions as the other tissues, such as inflammation, acute or chronic, and trophic changes generally. The nail substance, as a consequence, may undergo increase in quantity,

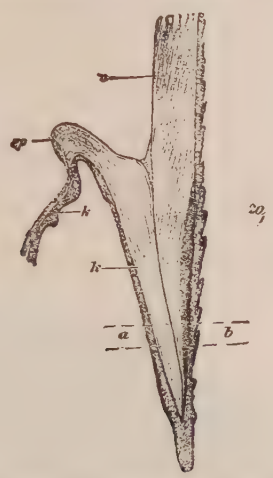


Fig. 87.—Longitudinal section through the nail, and nail fold of a child of three years old (Unna). × 20.

n, nail plate; *k*, *k*, granular layer of roof of nail fold; *ep*, eponychium.

hyperplasia or hypertrophy, diminution, aplasia or atrophy, and the shape, color, and texture may be altered.

Symptomatology.—It will be convenient to explain here the various terms which are used in the description of abnormalities of the nails, irrespective of their origin.

Pterygium (*πτέρυξ*, a wing) means the adherence and growth over the nail of the fold of skin which normally exists in a slight degree where the proximal end of the nail joins the finger. Retraction of this fold and exposure of the nail root

Society's Atlas, Plate XVII. Hutchinson's *Archives*, vol. x., 1899, contains a large number of plates of nail diseases. Shoemaker, "Disease of the Nail"; a large number of abstracts and references to interesting cases, *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. viii., 1890. Hutchinson's *Archives*, vol. ii. (1891), p. 237. Also Heller, "Die Krankheiten der Nägel," 1900, an exhaustive monograph on the nails, with numerous references and illustrations. Also Pernet, "Affections of the Nails" *Encyclopedia Medica*, vol. viii., 1901, gives copious bibliography.

occurs sometimes (*Ficus unguium*). It is said that curriers are liable to it.

Onychia (ὄνυξ, the nail) is the term used for inflammation of the matrix, whether idiopathic, traumatic, syphilitic, or otherwise secondary. It is not generally applied to chronic inflammations. Typical onychia maligna is usually single, often associated with ophthalmia tarsi and other signs of struma, and, according to E. v. Meyer, is due to direct tubercular infection on some injury, often very slight. A more chronic and less severe form may be occasionally met with. In a patient of mine, a woman, æt. forty-seven, subject to rheumatism, but otherwise well, suppurative inflammation of the matrix had attacked one finger after another, first of the right hand, and was

Fig. 88.—Transverse section of a nail, made through the proper bed of the nail (Biesiadecki).

a, nail; *b*, loose horny layer beneath it; *c*, mucous layer; *d*, transversely divided nail ridges, with injected blood-vessels; *e*, nail fold destitute of papillæ; *f*, the horny layer of the nail fold which has been deposited upon the nail; *g*, papillæ of the skin of the back of the finger.

beginning in the left ring-finger; after being bad for eight months, the first attacked, that of the right little finger, healed. In another, a lady of thirty-one,* suppuration under the nail fold had attacked different nails for seven months. In one attack all the nails were involved together. Half-grain doses three times a day of sulphid of calcium controlled it, but the disease recurred in a few days if she left it off. She had good general health, and no cause for the disease was discovered.

*Private Notes, L. 237.

In the more acute onychia maligna the inflammation is often phlegmonous, and then there is intense redness over the base of the nail, going on to lividity, heat, and throbbing pain; the nail itself is discolored by the inflammatory effusion beneath it; suppuration ensues, with sanious discharge; the nail is lifted from its bed, becoming thickened, opaque, and discolored, and is often completely thrown off, exposing a sloughy, easily bleeding surface. This may gradually clear up and heal, and an imperfect nail replace the old, or the inflammation may spread to adjacent tissues, and eventually to the lymphatics, and the condition known as **paronychia,** or whitlow, in its worst form be produced. It is one of the most striking symptoms of Morvan's disease.

A patient of mine had recurrent painful whitlows on nearly all her fingers for over forty years, the terminal phalanges were shortened and the ends much thickened. She had no symptoms of syringomyelia nor other disease. Avulsion of the nails and the application of iodoform produced much improvement and the cure of some of the lesions. The various forms of paronychia are described in all surgical manuals, and only the variety produced by **ingrowing toe-nail** will be here alluded to. This is produced by a spontaneous growth of the nail into the tissues, or, more frequently, by pressure or injury. Inflammation ensues at one or other upper angle of the nail, and a tender, granulating, discharging surface is produced, which grows over the nail, and may go on for an indefinite time, unless suitably treated. The inner angle of the big toe is the usual position for this troublesome affection.

Onychauxis (ὄνυξ and αὔξω, to grow) is synonymous with increased growth, or hypertrophy, of the nail whether simple or, as generally happens, with alteration in texture, color, and shape. When the growth is chiefly forward the nail is apt to become bent and twisted, sometimes spirally, like a ram's horn. This condition is termed **onychogryphosis** (ὄνυξ and γρυπός, curved). The nail is much thickened, strongly ridged both transversely and longitudinally, shining, but more or less discolored, of a yellow or brownish hue. Underneath there is an accumulation of softened, often evil-smelling epithelium. It is generally limited to the toes, especially the great toe, and is

rarely seen on the fingers. Nails of this kind may be three inches or more long, and of great thickness. But according to Heller's * observations the nail itself is not much thickened, but there is growth of a horny mass underneath it, which does not contain onychin and stains blue with Gram's method, while true nail cells do not. In the spaces are bodies which stain faintly with carmalum. In slightly marked cases the nail plate is more thickened than in extreme cases.

Onychomycosis (ὄνυξ and μύκης, a fungus) is the term used when the nail substance is invaded by a fungus. One or more nails may be attacked, and the fungus is that of tinea favosa or trichophytina. In this case the matrix is only involved secondarily, by direct extension (see Hyphomycetic Diseases).

There can be little doubt that the schizomycetes play a still more important pathogenic *rôle* than the hyphomycetes, but at present very little is known about the subject.

Shedding the Nails occurs from many causes, chiefly of a neurotic character. They may all be shed, or only those of certain fingers and toes. The great toe is the one most frequently affected. Shedding of the nails also occurs in the universal neurotic form of alopecia areata, in syphilis, in enteric fever, in diabetes mellitus; sometimes, without apparent cause: and Falcone † of Naples records a case of severe hysteria in which the nails were shed, preceded by tingling and suppuration of the matrix. Brown-Séquard records a case after section of the sciatic nerve. Shedding of the great toe-nail occurs sometimes in the course of locomotor ataxy, in some cases preceded by subungual ecchymosis.

It occurs in cases of annual "keratolysis," as in Stone's acquired case. Acute inflammation of the skin of the hand is sometimes followed by shedding of the nails, as in pemphigus foliaceus, pityriasis rubra, and recurrent desquamative scarlatiniform erythema, less frequently scarlatina itself. In a case under Colcott Fox,‡ a washerwoman, æt. fifty-four, all the

* Heller, *loc cit.*, p. 269.

† *Deutsch. med. Wochensch.*, October 14, 1886; quoted in *Lancet*, October 30, 1886.

‡ Colcott Fox, *Brit. Jour. Derm.*, vol. vii. (1895), p. 389. A similar, but more painful case was described by Rist, *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 1132.

terminal phalanges of the fingers and toes were inflamed, and the nails were shed without alteration in texture.

In a severe case of impetigo herpetiformis of Jamieson, the nails were shed and replaced by soft yellow pegs, which were painful to remove.*

Montgomery † records a case of hereditary and continuous shedding of nails; one or two at a time became dull yellowish-white over the lunula, and then became detached from behind forwards. The process of shedding occupied about three months, while in from three to eight months it was completely restored, and then another one would be attacked. His mother and uncle shed their nails in the same way, and other members of the family had bad nails.

In an anomalous case of recurrent erythematous inflammation in a boy of four, all the hair and nails were shed, and regrowth was very feeble and temporary. The cutaneous inflammation did not affect the scalp, but the ends of the fingers. Shedding occurs in epidermolysis bullosa also, and it may result in permanent destruction of the matrix.

R. Hilbert ‡ reports a case where for four years in succession, and always in September, the great toe-nails were shed without antecedent symptoms or known cause, except that before the first attack the patient had had a difficult mountain tour. Dubreuilh § recorded seven cases; some he thought were tropho-neuroses, others were unclassifiable.

The nails have also been shed after prolonged exposure to the Röntgen rays, but more frequently the effects are those of chronic onychitis.

Of all these conditions a moderate degree of onychauxis or hypertrophy combined with a certain amount of atrophic change, the result of symptomatic inflammation of the matrix, is the most common. The nail becomes more or less thickened, its texture less dense, owing to the loosened adhesion of its cellular elements, the surface loses its luster, discoloration of a dull yellowish hue ensues, and the surface may be more or

* Plate XXXVIII., International Atlas.

† Montgomery, *Amer. Jour. Cut. Dis.*, vol. xv. (1897), p. 374.

‡ Quoted by Shoemaker, *loc. cit.*

§ Dubreuilh and Frèche, "Décollement des Ongles," *Jour. de Méd. de Bordeaux*, Nos. 26 and 27, June and July, 1901.

less irregular from imperfect growth, and is furrowed and pitted in various ways. These conditions are most commonly the result of eczema, psoriasis, syphilis, or the trichophyton fungus.

Of **atrophic** conditions—furrowing, discoloration, loss of polish, and the pitted or worm-eaten appearance already alluded to, and white spots, are the most common symptoms. The nail, however, may be thinned and softened, or split, brittle, and crumbling. A good example of the latter is seen in some cases of nodulated leprosy, where the original, perhaps thickened, nails may be replaced by a few dirty greenish, horny flakes on the stumpy ends of the fingers. The nails may also be reduced to a rudiment in sclerodactylia. Sometimes these changes are due to local trophic defects of the matrix of the nails themselves, at others to some more distant nerve affection, *e. g.*, in neuritis as in "Glossy Skin" (see that disease). In partial destruction of the nerve supplying the digit, painful ulceration of the matrix may occur.

In gouty persons, one or more of the nails may form a central ridge and split down the center with slight eversion of the edges of the split.

Onychorrhexis. Brittleness of the nails is sometimes congenital, sometimes acquired. In a form described by Dubreuilh and Frèche * there is also thinning and longitudinal furrowing; the free border is serrated by longitudinal splitting extending towards the base. It may be associated with anomalies of development or other nervous affections. In pompholyx the nails in some cases split and chip (Hutchinson).

Unna † describes a peculiar case in which longitudinal tumors appeared in a circumscribed part of the nail, especially in the median line, over which the nail substance was raised up, became gradually atrophied, split, and the tumor was thus exposed. It was of chronic origin and due to venous stasis and was sometimes associated with symptoms of deeper venous stasis of the whole finger-end. Treatment was of small avail, but the condition underwent spontaneous improvement and healing. He recognized three stages: first, great longitudinal ridges with

* *Third Internat. Cong. of Derm.*, London, 1896, p. 845.

† *Vierteljf. Derm, u. Syph.*, vol. ix. (1882), p. 3, with woodcut.

decreased cohesion of the nail cells; secondly, reddish, longitudinal swellings; and thirdly, complete separation of the nails into two halves.

Ridged Nails. Longitudinal ridging sometimes occurs, but not with any definite etiology. In one form the ridges multiply and the disease goes on for years, and finally, the nail is lost. In one of Hutchinson's cases the nail fold grew forward and half covered the nail. A curious condition, in which all the nails of the fingers, but not the toes, had a central longitudinal ridge,* with a parallel groove on each side, came under my notice in a boy of twelve. The nail had lost its polished surface, being rough and fibrous-looking; the substance was thinned and had gradually become soft. No cause could be discovered, except that the hands were very cold. Possibly this was a minor degree of the condition above described by Unna.

Separation of the nails from the nail-bed without actual shedding is frequently seen in slight degrees in some inflammations of the finger-tips, and also in cases without traceable cause. An extreme case is reported by Casteret,† in which the whole anterior portion of the nail-blade was separated and raised up into an arched tunnel, exposing the whole nail-bed. The patient was a young adult, and no cause could be assigned for it. A slight degree of separation, either at the side or end, is common in psoriasis, and in a woman, æt. forty-two, with psoriasis, the front half of all the nails was separated.

In a case of Sangster's ‡ separation was followed by suppuration, and this by shedding of the whole nail, in a child, æt. seven. In a case of thickening and striation, vertical and transverse, Hallopeau and Le Damany found three kinds of cocci, which by cultivation gave short and long bacilli. The nails improved with a one in twenty salicylic acid application.

Very few investigations into schizomycetic invasion of the nail have been made, but in the dirt under the nail all sorts of microbes have been found by Mittmann, including the virulent bacillus pyocyaneus and fluorescens, and the staphylococcus aureus and albus.§

* Fig. 8 of Atlas, Plate XC.
† *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1419.
‡ Sangster. *Clin. Soc. Trans.*, vol xiii. (1880), p. 149.
§ *Ann. de Derm. et de Syph.*, vol. vi. (1895), p. 538.

White nails may occur in spots, bands, and in very rare instances all over. *White spots* are common, especially in young people; their mechanical cause is the presence of air between the lamellæ of the affected part, but their origin is unknown. In some cases they can be shown to be part of trophic changes. W. Sykes * states that in his own person he could produce white specks by scraping, pressing back, and cutting the skin over the lunula, but they are not always of traumatic origin. Bielschowsky † records a case of a man with peripheral neuritis, in whom white spots appeared at the lower part of the finger-nails, rapidly grew, and in three weeks coalesced into a band across each nail a millimeter wide. The toes were not affected. These bands or spots sometimes are a milder expression of trophic defect than the furrows above described. Dr. Longstreth ‡ suffered from relapsing fever, and a separate band bore witness to each relapse. Other cases of serious illness inducing white bands, instead of transverse depressions, are known. Langdon Down's case is especially noteworthy, but according to Heidingsfeld, cutting and pressing back the nail fold is the most common cause of the band form, and he had seen seven cases from this cause.

A case is recorded by Morison § of Baltimore, in which transverse bars of white, alternating with the normal color, appeared without ascertainable cause on the finger-nails of a young lady, and remained unchanged for months. Giovannini and Unna ‖ both record instances of complete whitening of the nails of the hands only, both in men. Giovannini's case began at the age of twelve, after typhoid fever; the hair was unaffected. Unna's case was probably congenital, and there was a partial condition of ringed hair also present. He calls the three forms leukonychia punctata, striata, and totalis.

Joseph's ¶ second case was that of a young girl. There was

* *Brit. Med. Jour.*, vol. ii (1897), p. 1260.

† Quoted in Supplement, *Brit. Med. Jour.*, January 17, 1891.

‡ Quoted by Shoemaker, *loc. cit.*

§ "Leucopathia Unguium," *Viertelj. f. Derm. u. Syph.*, vol. xv. (1888), p. 3, with plate.

‖ Giovannini, "Canities Unguium"; Unna, "Leuconychia and Leucotrichia"—both in International Atlas, Plate XIX.

¶ *Annales*, vol. x. (1899), p. 164, and *Derm. Zeits.*, vol. v. (1898), p. 651. He had previously published a case in Neisser's stereoscopic Atlas.

sub-ungual keratosis at the borders, and their convexity was directed below and their concavity above. There were also changes in the teeth. Parkes Weber and Krieg's * case was a man, æt. fifty-two, with old valvular disease of the heart; the toe-nails were partially affected, the finger-nails were flat and one was "spoon"-shaped. In Forcheimer's † case "spoon nails" were also present; all the nails were not involved in the leukonychia.

Spoon nails, ‡ in which the nail is thinned and concave from side to side with the edges everted, and with hollowing to a less degree, sometimes antero-posteriorly, have been observed in some wasting diseases, but also there are a few cases on record where the etiology is obscure. It begins on one finger, and gradually involves the others. I have not heard of it affecting the toes. In a woman of fifty under my care, it came on along with lichen planus of the limbs about four years previously. Brindley James relates a case of a girl of twenty in which there was no apparent cause. Coleman and Taylor record a case in a boy of eight also without apparent cause, but the brother had Raynaud's disease.

Eddowes showed a woman at Hutchinson's museum who had this condition, and said that all her brothers and sisters and all her father's brothers and sisters were affected in a similar way. The toes were slightly affected. In a case of Stephen Mackenzie's only those nails were affected in which there was end-joint rheumatism. Its association with leukonychia has already been noticed. Julius Heller has also had a case, and he refers to a case recorded by Ball in 1874, in which the frequent immersion of the hands in strong potash appeared to be the cause. In Morrant Baker's case no cause could be assigned. Collan's case was one of keratosis papillomatosus nigricans. It is, therefore, a trophic change which occurs with various associated conditions of which we do not know the common factor.

Tylosis of the matrix I have once observed in a cowman, æt. twenty-three. The nail was raised from its bed by a homogene-

* *Brit. Jour. Derm.*, vol. xi. (1899), p. 120.

† Quoted *Monatsh. f. Derm.*, vol. xxviii. (1899), January No.

‡ Heller suggests "Koilonychia" for this condition.

ous plate of horny epidermis, which filled up the usual interval between the nail and finger-end. It imparted a dirty yellow color to the anterior two-thirds of the nail. It appeared to begin at the free end, and had grown inwards like a wedge. The toe-nails were not affected. The man had hyperidrosis of the palms and seborrhea capitis. Le Fort met with two cases affecting the toe-nails.

Etiology.—The causes of abnormalities of the nail are:

1. Congenital. (*a*) Supernumerary nails, growing either on a supernumerary digit, or two on one digit, or growing in some abnormal position, as on the middle of the scapula (Tulpius). It may be added that supernumerary nails may be acquired, as on the stumps of amputated fingers, or as I have seen in leprosy, where the terminal phalanx had been lost. (*b*) Congenital onychauxis, when the digit on which it grows is abnormally large, *e. g.*, a patient of mine had congenital absence of the two middle fingers of the hand; the thumb and first finger were of enormous size, and the nails corresponded. In a case recorded by Keyes,* in a man, æt. forty-eight, the nail bed and consequently the nail itself extended beyond its usual limits laterally round the fingers and toes and forward over the extremity of each digit. The nails themselves were normal in appearance and consistence. He called it megalonychosis. Ramsay Smith's† case of a new-born infant showed a slight transitory condition of a similar character.

A more common cause is ichthyosis (see that disease). An interesting case of onychauxis, with onychogryphosis, is recorded by Sympson ‡ of Lincoln, in which all the nails of the fingers and toes projected upwards from the matrix like horny pegs. Nicolle and Halipré § met with a somewhat similar condition in thirty-six members of a family in six generations, but the nails were furrowed and friable and showed lamellar separation.

There were also atrophic conditions of the hair. In one of the cases there was chronic periungual ulceration with frightfully offensive discharge. (*c*) Congenital absence or

* *N. Y. Medical Record*, April 23, 1898.

† *Jour. Anat. and Phys.*, vol. xxvi., 1892.

‡ *Lancet*, April 14, 1888.

§ *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 804, illustrated.

atrophy is rare, but a few cases are on record.* A case with congenital thinning of the nails is depicted in my Atlas in the nail plate. Jacob † had a case with rudimentary nails in a boy of fourteen.

2. Acquired onychauxis may occur from (*a*) unrestrained growth, of which onychogryphosis is an example, and is seen chiefly in bedridden and elderly people, or others who cannot or will not give their nails the requisite attention; (*b*) from elephantiasis Arabum and other causes of obstructed circulation, *e. g.*, lateral pressure of tight boots. (*c*) Inflammation of the matrix, acute or chronic, whether idiopathic from injury, mechanical or toxic, parasitic or symptomatic.

In a woman, æt. forty-eight, after severe seborrheic eczema capitis et palmæ, all the nails increased in thickness until they were at least half an inch thick and an inch and a half long, yellow and opaque, and very dense. After prolonged treatment the inflammation subsided, and as the hypertrophied nail grew out it was replaced by a nearly normal nail. Unna has also noted nail changes with seborrheic eczema, but Audry thinks the conjunction is extraordinarily rare.

Acute idiopathic inflammations have already been treated of under Onychia. The nails are often accidentally involved in acute inflammations, such as erythema iris, pemphigus, yaws (Nichols), smallpox, the inflammation taking place beneath the nail and loosening its attachments more or less; spots of xanthoma also sometimes occur in this position; and warts may grow beneath the nail in a flattened form.

The chronic inflammations are generally the result of eczema, psoriasis, pityriasis rubra, lichen ruber, and in all these there is more or less discoloration and thickening, as a rule, often combined with pitting; but when they take an acute form, some thinning may be produced, as often happens in pityriasis rubra. The most marked instance of thinning and softening is that which occurs in pemphigus foliaceus, a disease which is chronic in duration, but acute in its manifestations. Other causes of atrophy are neurotic conditions, *e. g.*, neuritis, already alluded to, syphilis, and leprosy. Besides the vegetable

* Petersen and Tarnowsky record cases reported *loc. cit.*, p. 69. See also *Méd. Moderne*, September 22, 1896, by M. Jacob.

† *Malad. Cutan.*, vol. ix. (1897), p. 55.

parasites of favus and ringworm, animal parasites may also affect the nail, as in the worst or Norwegian form of itch, never seen in this country; the chigoe or pulex penetrans of the West Indies; and in the case of some other tropical insects.

The descriptions of these symptomatic affections of the nails are given under the various diseases which give rise to them. They are rarely congenital, but may be apparently idiopathic and localized in one or affect several nails, or it may be a part of the general malnutrition, and sometimes an early sign of nervous exhaustion. It is seldom possible from merely inspecting the nails to infer the cause. The diagnosis has to be made from the presence of eruptions elsewhere, or from other collateral circumstances.

The nails also undergo more or less change in connection with more general affections. Thus in "clubbed fingers" from obstruction to the circulation, as in many chronic cardiac and lung affections, the nails become rounded as well as of a bluish tinge. In hemiplegia growth is arrested, as a rule, but there may be thickening and broadening (Esbach).

Eichorst records a case of pernicious anemia in which the nails were thickened, fissured, and crumbled at their free ends.

In akromegaly there is marked striation, but not always increased growth. In aneurysms there is sometimes increased growth of the nails (Brocq), while in a fractured limb it is said that the nails cease to grow until bony union has occurred. Zeissler, however, suggests that the cessation of growth is due to interference with the circulation from the pressure of the bandages and splints.

In keratosis nigricans, longitudinal striæ and pitting sometimes occur, and spoon nails and white bands have been noted.

T. Acland relates a case of clubbing of the fingers, with separation of the anterior portion of all the nails from the matrix, which he thought was due to Raynaud's disease, but without any strong reason for the supposition. Of course in undoubted Raynaud's disease damage to the nails would naturally result. I have seen separation from the matrix even down to the lunula several times without any suspicion of Raynaud's disease.

Reedy nails, in which the natural longitudinal striæ become very marked, apparently from wasting of the intermediate por-

tion, are regarded by many as a sign of gout;* but they are also very common in old persons who show no other sign of gout, and are then only one of many other senile atrophic changes.

Transverse furrows show that the nails also take their share in severe illness—*e. g.*, in fevers, choleraic diarrhea, pneumonia, etc., there is deficient growth, and after recovery a furrow remains as a memento until it has grown to the end of the finger. The thumb is most affected and the index finger is next in degree. In relapses of typhoid and similar conditions more than one furrow may be present, being the record as well as the consequence of the illness. Wilks relates an interesting case in which two furrows recorded sea-sickness on August 28 and October 8 respectively.

White bands may take the place of furrows, and in a case of Hutchinson's a band of hemorrhage marked one attack of illness and a furrow the next.

Diagnosis.—The diagnosis of the origin of the nail change can seldom be made from the naked-eye appearances of the nails themselves. If due to a constitutional condition, such as gout, syphilis, or leprosy, it is by the evidence of these diseases elsewhere that the cause of the disease of the nails is inferred. The same is true for nail disease as a part of other cutaneous inflammations, eczema, psoriasis, tinea tonsurans, etc. It is very rare for the nail affections to be the sole manifestations of such diseases, and when they are so the diagnosis is little more than guesswork, unless there is a history of previous cutaneous disease. Hutchinson, however, considers that the separation of the nail from its bed, either at the side or end, is characteristic of psoriasis. Where the possibility of a fungous origin is present microscopical examination of nail scraping (after prolonged soaking in liquor potassæ B. P., or a forty per cent. solution may be used to get more rapid results) is essential, but it is not always easy to detect the spores and mycelium in nails only slight affected.

Treatment.—Only the treatment of those nail affections which are not alluded to elsewhere is described here.

* Laycock first observed the connection, and Duckworth insists strongly on it.

In severe *onychia* the tension may be relieved by incisions and removal of the nail, and the surface cleaned up by iodoform or iodol and wet boric lint under oiled silk. Thorough local disinfection, in short, is essential. Internally, the treatment must be a supporting one—quinine in full doses, sulphid of calcium half a grain three times a day, a generous dietary, and a bracing climate.

Onychogryphosis only requires that the superfluous part of the nail be removed, after softening by soaking in hot water. Hans Hebra treated a case successfully by insinuating a flat platinum knife of a Paquelin's cautery under the nail until he had burned away all the abnormal accumulation, for which eighteen sittings were required; the nail grew up healthily and remained well.

In *in-growing toe-nail* the nail should be softened, scraped thin in the center, the unhealthy granulations destroyed with acid nitrate of mercury, the sharp edge of the nail removed, and the raw surface treated with wet lint under oiled silk, applied with pressure, a part being pushed between the nail and the skin. In some cases avulsion of the nail is required, and in all cases, properly made boots should be used, or the evil will recur. Scott-Battam's treatment is a good one. "First wash and dry the parts, and then thoroughly rub the granulations with solid nitrate of silver. Since the introduction of cocain this proceeding can be rendered practically painless. Next, cut small pieces of fine Turkey sponge, and press them well down between the nail and the granulations, inserting a small piece beneath the inner free edge of the nail. Pressing this sponge pad downward and inward, fix it in place by winding a long, narrow strip of plaster round and round the toe, commencing from the outer side, the aim being to compress the granulations, and draw them as far as possible from the nail. A soft, easy shoe should now be worn, and patients can pursue their ordinary avocations without risk. Some aching pain often follows, but this is soon succeeded by a considerable feeling of relief.

"The dressing should be removed and the process repeated in two days' time. A sulcus will then have formed between the flesh and the nail, and on removing the crust formed by the nitrate of silver, a healthy ulcer will be found to have replaced the exuberant granulations.

" On the fourth or fifth day, after well soaking the toe, apply cocain, and endeavor to insert a small piece of sponge beneath the edge of the nail, which is now more fully exposed, or a piece can be removed with fine scissors. A mixture of iodoform and alum is now dusted in, and the sponge compress applied as before. In a week or ten days' time the process is repeated, especially if the ulcer is not healed. After a similar interval the raw, tender surface will be found to be hard and painless. It is well to continue treatment a little longer, and the dressing can be worn for two or three weeks without discomfort."

In cases of *chronic onychauxis*, where the cause is not ascertainable, the same treatment as for chronic psoriasis of the matrix is generally successful, together with the administration of arsenic, or the remedies suitable for any departure from health which can be detected. One of the most generally useful for chronic onychitis is a salicylic ointment ʒss or ʒj to ʒj of lanolin c. oleo, spread on strips of linen, and bound closely on night and day, pushing the ointment well underneath the posterior nail fold. When the skin begins to peel the ointment may be intermitted for a few days. Shoemaker strongly recommends oleate of tin gr. 20 to ʒj to ʒj of lard for cases of this kind. The nail is wrapped up in it as just described. A little carmin may be added to color it. T. H. Irquhart also speaks well of it from experience on his own person.

Sabouraud recommends constant soaking in a solution of iodin 1 in 1000 dissolved by the aid of iodid of potassium. A one in twenty solution of salicylic acid in spirit is also useful. All these remedies act by their microbicide action, for, as has been pointed out, in a large number of nail affections, primary or secondary microbic invasion occurs. Whichever application is selected, daily scraping the affected nail with a piece of glass increases the penetration and therefore the efficiency of the applications.

CLASS X.

HYPHOMYCETIC PARASITES.

The diseases included in this class are due to the various members of the hyphomycetes or fungus family. They are:

I. Favus: due to achorion Schönleinii.

II. Common ringworm: due to various species of tinea trichophytina.

III. Tokelau ringworm: due to tinea imbricata.

IV. Tinea versicolor: due to microsporon furfur.

V. Erythrasma: due to microsporon minutissimum. Some think this is a micrococcus, and that it belongs therefore to the schizomycetes.

VI. Pinta: disease of Mexico; fungus unnamed.

VII. Mycetoma: due to chionyphe Carterii (?), one of the actinomyces; or to the streptothrix or discomyces maduræ of Vincent.

VIII. Actinomycosis: due to actinomyces.

IX. Blastomycosis: due to blastomyces, or yeast plant.

Only the first two diseases affect the hair follicles as well as the rest of the skin.

Mycetoma, actinomycosis, and blastomycosis are not limited to the skin, but affect other tissues, and there is reason to believe that mycetoma is really a form of actinomycosis.

IV., V., and VI. affect only the surface layers, and produce discoloration only.

In order to find the fungus, if merely for diagnosis, it is sufficient to wash the hairs in ether to remove the grease, and then soak them for a few minutes in liquor potassæ B. P., that is, a six per cent. solution of caustic potash. When details of the arrangement and character of the fungus are desired prolonged soaking in the potash solution is often necessary, or staining methods may be employed (see Appendix), especially if permanent specimens are required; but for ordinary clinical diagnosis the potash solution is sufficient. The following favus and

ringworm original illustrations are all made from fresh specimens after soaking in the above potash solution. The fungus will resist the action of the potash for several days, although the scales or hairs which it permeated are dissolved.

When a more complete examination still is required, culture experiments on suitable media, such as the potato, beer maltose, gelatin and agar agar, etc., are necessary. Unna insists on the value of pepton lævulose as a uniform cultivating medium. This takes the matter beyond clinical medicine and the scope of this work, and for this Sabouraud's, and Fox and Blaxall's researches should be studied. Leslie Roberts' investigations in another direction are also deserving of attention.

FAVUS.*

(Lat. for honeycomb.)

Synonyms.—Honeycomb ringworm; Tinea favosa; Tinea vera; Tinea lupinosa; Porrigo lupinosa; Porrigo favosa; *Fr.*, Teigne faveuse; *Ger.*, Erbgrind.

Definition.—A vegetable parasitic and contagious affection of the scalp and general body surface, characterized by sulphur yellow, cup-shaped crusts embedded in the epidermis, and in hairy parts pierced by a hair.

This disease is extremely rare in England (1 in 2000 in my practice), but is common in Scotland (31 in 2000, McCall Anderson), while in France † and Poland it is almost as common as tinea tonsurans is in this country. Its favorite seat is the scalp, but absolutely no part of the body surface is exempt from its attack, and it may even affect mucous membranes, such as the glans penis, and in one instance, the mucous membrane of the stomach. It differs in aspect somewhat according to whether it attacks hairy or non-hairy parts of the body.

Symptoms.—It appears first on the scalp as a very small, sulphur-yellow disc, called a scutulum, embedded in the epi-

* Author's Atlas, Plate XCI., Figs. 1 and 2, as it affects the scalp and glabrous skin.

† Feulard stated in 1892 that in France about one thousand conscripts, chiefly from the country districts, were annually rejected on account of favus, but that the number was gradually diminishing.

dermis, and pierced by a hair. If, when it has attained to the size of a hemp seed, it is dug out and removed with its attached hair, the under surface is found to be smooth, convex, moist, and slightly greasy to the touch, while the upper surface is slightly concave, and mixed with the whitish epidermic scales, which also remain attached to the border like a collar. There is a depression left in the rete from which it has been dug out, but this is only due to compression of the cells, which soon swell and fill it out when the pressure has been removed, unless the crust has attained to some size and has been long there, when there may be serous exudation or even bleeding at the time of removal of the crust.

As the small disc enlarges it projects at the periphery more than at the center, and thus a cup-shaped depression is produced; still growing larger, it may reach to the size of a sixpence. These large crusts are relatively flatter and furrowed by concentric rings or variously fissured, or they may grow vertically more than peripherally, and thus form elevated, irregular, craggy masses, with a white center, but the typical sulphur yellow shows at the periphery, unless blood-stained from scratching. After having attained its full development, varying much in extent and duration, but generally taking several months, it becomes paler and of a dirty yellowish white. The margin is elevated through the epidermic covering, and the whole shells off, either spontaneously or from some trifling friction, and the skin beneath, from the long-continued pressure, is left depressed, hairless, thin, white, and glistening; in short, an atrophic scar results.

The hair appears dry, lusterless, and brittle, and sometimes splits longitudinally, getting separated more or less from its root attachments, so that it falls out, or is easily drawn out with portions of the root sheath attached; and the papillæ being often atrophied from pressure, no new hairs are regenerated, and the follicle becomes obliterated. Itching and a sense of fullness are the only symptoms complained of, but there is a peculiar, musty, strawlike or mousy odor when the disease is at all extensive.

Sabouraud says that favus always leaves a fringe of hair on the forehead unaffected. This may be true as a rule, but I have seen this fringe destroyed by the fungus in one case.

Variations.—Such is the course and development of a single scutulum (**F. lupinosa**), but in neglected cases many may coalesce into an irregular mass, with a curvilinear border, indicating the component cups of which it is made up, and according to the shapes and aggregation names were given in former days, but have now deservedly dropped into disuse. In such a case all stages may be presented at the same time. On one part of the scalp will be these masses; at another, isolated typical favus cups; or again, white, atrophic scars, with the skin thin, shining, and stretched over the bones, and at intervals, thin tufts of hair, whose follicles have escaped the general destruction. In the favus masses themselves the hair is dull, dry, and dusty-looking, and easily removable, unless there remain a few unaffected, and therefore healthy hairs. Complications may arise, of which the most common is pediculosis, with its usual concomitants, eczema, impetigo contagiosa, and enlargement or even suppuration of cervical glands, etc.

Simon describes superficial erosion of the scalp from pressure of the favus masses, and others have described necrosis of the skull and favus ulcer; but since neither Hebra nor Kaposi has met with them, such conditions must be extremely rare, and it is probable that the ulcers are really only the pressure-pitting already described.

Favus is an essentially chronic disease, beginning in childhood and lasting for many years; one of my cases, a German boy, æt. fifteen, had had it since he was two years old, and Kaposi speaks of it lasting until the patient was forty years old or more—in fact, as long as there were any hair follicles remaining to be attacked; in other cases it spontaneously stops, leaving one or more bald patches.

In a case at the Hôpital St. Louis * it had existed untreated in a man of forty-two from the age of thirteen years all over the scalp. Only in the last six months had the lower limbs been attacked, and in a month from the onset spread nearly all over them. He had not transmitted the disease to his wife, though he had been married five years.

On the non-hairy parts, while the scutula present exactly the same characters, variety, and development, there is often an

* *Brit. Jour. Derm.*, vol. ii. (1890), p. 149. Letter by L. Wickham.

additional feature, somewhat resembling tinea circinata, viz., a round, red, scaly patch, which develops into a circle with a paler, scaly center and a red, elevated margin, smooth, papular, or vesicular. On the surface of the skin sometimes several concentric circles form round a central favus cup, which has developed on the initial disc, or again, several circles coalesce and form a gyrate pattern round the crust or crusts, which may also be present on the margin; when there are no crusts the circles may disappear spontaneously, after growing to a varying degree. Favus of the free surface has generally, but not always, originated from the scalp. As a rule, when once it has commenced, it develops more rapidly than on the scalp, and the lanugo follicles being more superficial, there is a far greater chance of its spontaneous disappearance, but sometimes it persists for years (twenty years, Michel), and in long-standing cases, produces atrophic scarring, as on the scalp, though there is here also a better chance of the scar being eventually obliterated. When first inoculated circles of herpetiform vesicles often form, the characteristic cups not appearing till a later period.

When neglected it may extend over nearly the whole of the body and limbs, as in Roddick's case,* and sometimes time and the patient's idiosyncrasy modify the appearances. In a case shown by Hutchinson at the Dermatological Society, a boy of fourteen, "the whole of the scalp hair had been destroyed, and the scalp reduced to the condition of a scar. The face, part of the scalp, and the fingers were covered with thick hornlike crusts. The nails were thickened and broken up. On many parts of the body and limbs there were crusts and conspicuous scars. The peculiarity was that nowhere was there any crust in the least resembling favus, nor was there any approach to the peculiar odor of that malady, but the fungus of favus had been found both in the crusts and in the scrapings of the nails, but only after very careful search; moreover, two cases of favus arose in the ward while he was in the Plymouth Hospital. The boy's lips were excoriated and the mouth generally inflamed. His circulation was feeble and his hands and feet dusky."

In a unique case of universal favus, shown by Kaposi and

* *Montreal General Hospital Reports*, vol. i., Plate VIII.

Kundrat * to the Society of Physicians of Vienna in October, 1884, and the morbid specimens subsequently on November 28, the patient died from gastro-intestinal irritation with uncontrollable diarrhea, and at the post-mortem erosions and diphtheritic swellings were found in the mucous membrane of the stomach, and the intestines contained foul, putrescent masses and much mucus. These swellings in the stomach were proved to be due to the favus fungus; and there was a little fungus found in the intestine, but the great bulk had undergone putrefaction.

Dubreuilh recognizes three clinical varieties:

1. A pityriasic, or scaly variety, easily confounded with psoriasis of the scalp.

2. An impetiginous, or pustular variety, in which the favus lesions are covered with crusts like impetigo contagiosa, or some pustular eczemas, a variety previously described by Aubert.

3. An alopecial variety very difficult to distinguish. In this variety there are serpiginous plaques, smooth in the center and surrounded by a slight zone of folliculitis. The hairs in this zone pull out easily with a thick, soft, transparent sheath, and they spring from a red, very slightly raised acuminate projection with a small scale or grayish-yellow crust upon it. It is, therefore, an entirely follicular favus, resembling lupus erythematosus of the scalp, and still more folliculitis decalvans; indeed, Dubreuilh is inclined to regard the latter affection as really follicular favus. The chief diagnostic points are: The long duration of the affection—often months or years; the alopecia being cicatrical and smooth; and finally, the minute yellow crust at the base of the hair, which is absent in folliculitis decalvans. The hairs are also dry and dull, and they pull out very easily. In dark-haired people the difference in the color of the hair is very noticeable.

Favus of the nail is extremely rare, and is thus described by Kaposi: "One or more nails may be affected in one of two ways: in one a scutulum is formed in the deep cells of the nail substance, as well as the structure of the nails permits, showing through the smooth layer of the nail over it as a sharply

* French *résumé* of the case, *Annales de Derm. et de Syph.*, vol. for 1895, p. 104.

defined, pale sulphur-yellow mass; it occupies only a small part of the nail, either at the side, from the fold to the center, from before backwards, or near the lunula. In the other variety it is indistinguishable, except by the microscope, from any other form of onychitis; the nail is dry, lusterless, discolored, and opaque, furrowed, fissured, split into laminæ, and raised up from its bed. When scrapings are placed under the microscope, mycelium and spores of the same characters and arrangement as in the root sheath of hair are to be found. As it is almost invariably derived from inoculation from scratching the scalp, evidence of the existence of the disease either in the present or past can always be found, and will assist in the diagnosis."

In extreme cases further changes occur; thus in Morris' case * no trace of true horny substance remained, being replaced by an irregular, lumpy, dirty yellowish crust. Fabry † found the changes limited to the epithelial portion, the breeding-place being between the corium, papillæ, and the epithelial pegs, and thence the fungus advanced into the upper layers of the uncornified epidermis, but not into the horny layers.

Etiology.—Direct contagion from person to person is the usual mode of origin, but it may also be derived from animals, rabbits, ferrets, fowls, dogs, cats, and mice, which are all liable to it, and therefore possible sources of contagion, cats being the most common source of it. It has occurred under poultices without any ascertainable source of infection, the spores doubtless having been derived from the air, and found a favorable nidus in the warmth and moisture of the poultice. It is, however, far less easily communicated than ringworm, as it develops much more slowly, and therefore requires to be undisturbed for some days after deposition, the most favorable position being at the orifice of the hair follicle; ‡ these conditions are therefore seldom fulfilled, except among the unclean and

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 101. A generalized case (photo). He refers to a case of Gull's with the nail affected.

† Fabry, *Archiv f. Derm. u. Syph.*, 1890, p. 21, illustrated.

‡ Peyritsch found that if the skin immediately round a hair was pricked, and water impregnated with favus spores deposited immediately on it and allowed to evaporate, inoculation seldom failed, but it took three to six weeks to develop (quoted in Hebra, vol. v. p. 163).

neglected, and it is therefore where dirt and squalor reign that it finds most congenial quarters.

Kaposi says it is very rare for it to spread in a family, school, or community, but this is surely an error. The following cases

Fig. 89.—Hair shaft and hair bulb from favus. × 700 (Kaposi). *a*, hair bulb; *b*, *b*, root sheaths, both being abundantly infiltrated with fungus.

came under me at the East London Hospital for Children: The disease was probably derived from a cat, in which the hair came off in patches. The family lived in great poverty and dirt,

and their heads swarmed with pediculi. A girl, æt. seven, was the first infected; when seen, six months after infection, the whole scalp was affected, and there were patches on the shoulders and arms. A brother, æt. nine, was next attacked, four or five months before he came to the hospital. It began in the front of the ear, and spread all over the head in a month; it appeared on the arms about the same time, but had only been present for a month on the thigh. The largest isolated patches were of the diameter of a good-sized pea, but compound patches were sometimes two inches in diameter; the glands in the neck were much enlarged, but where the hair was not cut it was full of nits. Another brother, æt. eleven and a half, had only had the disease one month, and it was limited to the right parietal region. Cases which have arisen in hospital from contact with a favus patient have already been mentioned, and I have witnessed one occurrence of the kind.

Pathology.—The disease is due to the infiltration of the epidermis and hair follicles with the mycelium and spores of a fungus which is usually called achorion Schönleinii, though some observers claim that this comprises several distinct species. The spores generally gain access into the skin by the orifice of the hair follicles, where they have sufficient space to develop round the shaft of the hair, and separate the layers of the epidermis between which it grows, and, except in the neighborhood of the hair where it is held down, elevate the upper portion of the epidermis to about one-sixteenth of an inch above the surface at the periphery, sloping down towards the center, and thus the well-known cup shape is produced. The rete cells below are soft, and get depressed by the downward pressure of the growth, and if not released by the removal of the favus mass, ultimately atrophy, together with the immediately subjacent tissue, and thus produce atrophic scarring. More or less inflammation of the cutis is produced by the presence of the fungus, and Robinson attributes the cicatrization to this cause; he also describes cystic degeneration of the sebaceous and sweat glands, and consequent retention of secretion. Leloir and Vidal figure also the dissociation and infiltration of the connective tissue by the fungus spores.

Unna ascribes the cup shape, which is present even when the scutulum is not seated at a hair follicle, to unequal growth, the

base and sides growing more vigorously than the center of the scutulum, which at first rests on the lower strata of the horny layer, and is surrounded by the middle and upper strata which compress it, though it may become free subsequently. A distinguishing feature of the scutulum, he says, is the perpendicular growth of the filaments from the horny layer.

Anatomy.—When a section is made through a scutulum, there is first a layer of horny cells; beneath this lies the scutulum, still in the horny layer, and consisting solely of hyphæ and spores, Unna * and Kellogg say with the mycelial threads growing perpendicularly, which Unna regards as a charteristic feature of favus. This differs slightly from Bennett's original description. He says that at the top of the scutulum there is a layer of finely granular, viscid material, consisting of a mixture of disintegrating epidermic cells and gland secretion, and this is continued for a considerable depth, and forms a kind of supporting stroma for the long mycelial threads, which give off branches more and more frequently, until they terminate in the production of conidia, which become so abundant that the center appears to consist of little else. Individual threads of mycelium may be smooth-bordered, small, and with or without septa or nuclei; but most of them are moniliform, the individual segments varying in length and diameter, but thicker as a whole than the smooth-bordered threads. The spores may be globular, discoid, oblong, or polyhedral, with a central nucleus, and this, when large, gives the appearance of a double contour. Unna and Mibelli agree that the bulb is always free from fungus, and that the hair sheaths rarely, and the hairs themselves never, show splitting. There is always atrophy of the sebaceous glands, and in the late stage the elastic tissue is completely atrophied. Cocci and other foreign bodies are only found in old broken-up crusts, never in the recent scutulum. To see the fungus in the hair, the latter must be soaked in the B. P. solution of caustic potash (six per cent.) and flattened out slightly; both mycelia and conidia can then be shown abundantly in the hair shaft, running for the most part, but not altogether, parallel to the axis of the shaft. It appears probable that the fungus gains entrance into the hair at the bulb where the cells are soft, though to a less extent it may invade the hair through the cortex also, but it does not seem to go much beyond the level of the root sheaths. The threads and conidia run in all directions, and in parts get between the root sheaths and the hair shaft, and separate the latter more or less from its attachments, so that it is, as a rule, easily withdrawn. One of the results of the injured nutrition of the shaft is, according to Aubert and Robinson, a longitudinal striation caused by air between the fibers, which simulates mycelium. Robinson considers this characteristic of favus, as it is not present in trichophyton tonsurans. In the ringed,

* "Histopathology," p. 386, gives elaborate description of the anatomy of the scutulum.

scaly form of eruption, which is seen on the free surface, the fungus elements spread laterally between the epidermis layers, while in the nails it develops very much in the same way as in the hair shaft.

The Nature of the Fungus.—Although Schönleinii in 1839 first demonstrated the fungus which Remak christened after him, he did not recognize its etiological significance, which was first demonstrated independently, with a detailed description, by Grüby in 1841.

The unity of the fungus in human favus remained undisputed until 1886, when Quincke isolated three species, α, β, γ, afterwards reduced to α and γ, the α fungus having been found in three cases only. Gerlach

Fig. 90.—Fungus elements from the under surface of a favus scutulum. × 700 (Kaposi).

had previously discovered a favus-like affection in fowls, due, as Mégnin showed, to the epidermophyton gallinæ, while Costantin and Sabrazes demonstrated a dog variety oösporo canina. Unna and Frank found three varieties, since increased to nine. In 1894, Bodin * again investigated the subject in the light of Sabouraud's observations on ringworm fungus, and came to the conclusion that, while there is a clinical unity in favus, *i. e.*, that any variations in the clinical aspect of the disease do not correspond with microscopical and cultural differences, as is seen in ringworm, nevertheless he makes out five varieties: 1. The achorion Schönleinii of Kral. 2 and 3. Two species not previously described. 4. Achorion entythrix of Unna. 5. The achorion atachton of Unna. On the other hand, Elsenberg, Kral, Dubreuilh, Pick, Mibelli, Plaut, Jadassohn, Marinelli, and Biro all agree that there is only one species. In 1893, Dubreuilh and Sabrazes again affirmed this. Kluge † also in

* *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1220. References to date. There is an error in his quotation from Quincke, where he says that it is β and γ which are left, instead of α and γ.

† Kluge, *Derm. Zeitschr.*, vol. iii. (1896), p. 141.

1896 found Quincke's γ fungus only in six cases, both on the hairy and glabrous parts; and Danielssen,* after numerous inoculations on the human subject, concluded from the uniformity of his results that the achorion Schönleinii was the only fungus of favus. Obviously further research is required before the matter is beyond controversy, but the great variability of fungi under cultivation according to the media and to temperature, moisture, and access to air, must always be borne in mind, as Leslie Roberts' work demonstrates, and as Tischonthisie showed from one thousand cultures on fifty different media. An acid medium was the best.

Diagnosis.—Favus is one of the most distinctive of skin diseases. The sulphur-yellow, cup-shaped scutula, with a central hair, if situated on the scalp, are quite unmistakable.

In the later stage, when isolated scutula have coalesced into an irregular, mortar-like mass, some care is required to distinguish it from *psoriasis* of the scalp. The edges keep their yellow color longest, the scales are less nacreous than those of psoriasis, and the loss of hair is much greater; and if there is any atrophic scarring that would at once exclude psoriasis, in which the hair also preserves its luster, while it is soon lost in favus. Of course, if the idea of favus was once suggested the microscope would solve the difficulty, and close examination would probably discover some yellow discs round the hair in some parts.

When the scutula have fallen off or been rubbed off, unless there is scarring, it might be mistaken for seborrhea, a scaly eczema, a psoriasis, or tinea tonsurans.

Eczema and seborrhea, however, are diffuse diseases with ill-defined borders, while in favus the border would be rounded and defined. Any loss of hair also that there may be would not be in patches, but rather a general thinning, and there would certainly be no scarring. It is in the absence of this only that difficulty can arise with any of these affections.

In *ringworm* the resemblance may be very close, and even the microscope will not decide it always with certainty, and a cultivation on potato or a suitable gelatin medium † might in rare cases have to be made.

* Atlas of Vegetable Parasitic Diseases, Bergen, 1892.

† A case by Fortunet and Courmont (*Annales de Derm.*, vol. i. (1890), p. 239) demonstrates well the difficulty sometimes experienced. Neither clinically, microscopically, nor culturally was a diagnosis possible until

In examining the scales for fungus it must be remembered that all the scales are not fungus-bearing, and it is necessary to examine scales and hairs from several places, and that carefully, following the directions already given for the detection of fungous elements. If these be found it is not always possible to decide what form of mycosis is present from the conidia and mycelium, as they present great variation in aspect, even in the same species, but the distinctions laid down by Kaposi are true in the main, and are as follows: "In the achorion this consists in a predominance in the conidia forms, and in the great variety they exhibit as to size and conformation, in the comparatively short and remarkably jointed appearance of the mycelium, the scarcity of the smooth-bordered variety, and the ease with which it breaks up into single cells. In tricophyton the greater tenacity and stretched appearance of the much-branched and for the most part smooth-bordered mycelium, and the small number, uniformity, and comparatively small size of the conidia, are the chief features. In the microsporon furfur the peculiar arrangement of the conidia in heaps or clusters and their uniform and large size are the main characteristics."

Careful attention to these criteria will assist in coming to a right conclusion, but they should always be taken in conjunction with the clinical features and not be relied on exclusively. As a last resort in cases of extreme difficulty the disease may be left untreated for a time, and in a week or two, if it is favus, some new yellow crusts will begin to form, while, if ringworm, the disease will show signs of spreading, with the production of new foci.

Prognosis.—Although the disease is very obstinate and tedious it may always be ultimately cured by steadily-persevered-in, judicious treatment. Thus a case of mine which had lasted thirteen years was cured by treatment in a year and a half. Favus is much more tractable on the skin than on the scalp, and is curable in a comparatively short time. Beyond the permanent baldness and scarring favus was regarded as incapable of doing serious injury to the health until Kaposi's fatal case of universal favus already alluded to.

a culture was inoculated on the head of a mouse, when typical favus was produced.

Treatment.—The treatment of favus of the scalp is of threefold character. The crusts must be removed, the epilation of the affected hairs efficiently practiced, and parasiticides applied so as to penetrate as deeply into the tissues as possible. For the removal of the crusts carbolized olive oil should be copiously rubbed in, and also left to soak in, by applying strips of flannel soaked in oil fastened on with a cap; in twelve or twenty-four hours the crusts can be removed with a paper knife, and then the whole scalp should be thoroughly cleansed with soft soap. Epilation can then be proceeded with. Kaposi recommends that this should be effected by seizing some of the hair between the thumb and a flat surface like a tongue spatula; the force thus used is only sufficient to draw out the diseased hairs, leaving the healthy intact, and he claims that the process is almost painless. Parasiticides must then be rubbed or brushed in vigorously. These three measures should be daily repeated until a cure is effected, but as the diseased hairs become fewer epilation must be practiced with forceps, pulling them out singly, and in the direction in which they are growing. Where they are more numerous the large broad-pointed forceps, suggested by Dyce Duckworth, are of service, but the operation is too painful for very young children.

The parasiticides, which should be applied immediately after epilation, are of the same kind as those recommended for tinea tonsurans, to which the reader is referred. I cured one case of twelve years' duration with resorcin ʒj to ʒj of lanolin and oil. Mibelli recommends twenty per cent. of oleate of copper and washing with soft soap and spirit every two or three days.

I have found a combination of ten per cent. oleate of copper, three to five per cent. chrysarobin, and lanolin and lard for the base, a very good application. Like all chrysarobin applications it must not be used close to the face.

After continuing these plans daily as long as there is any visible disease, which will take at least three months, and often more, a rest of a week or more may be given, to see if any fresh yellow spots develop; and when these appear they must be attacked vigorously, as before, each hair being removed with forceps. The disease may be considered cured, when even after six weeks' discontinuance of treatment there is no localized scaliness, much less a scutulum, and no loose, dull, degenerated

hairs to be found. The treatment and necessary observation require, therefore, at least six months.

On the free surface all that is required is to soften the crusts with oil, remove them and all epidermic scales by thorough washing with soft soap, and then rubbing in one of the parasiticides recommended in tinea circinata, or painting on linimentum iodi; two or three weeks of such treatment are, nearly always, sufficient for a cure.

Favus of the nails is most quickly cured by avulsion of the nail, and applying the parasiticide directly to the parts beneath, but this severe procedure is rarely absolutely necessary, the treatment for tinea of the nail being equally efficient, though more tedious than avulsion.

Favus-like lesions of the oral mucous membrane due to the aspergillus nigrescens have been described by Winfield * of Brooklyn. It was supposed to have been derived from eating moldy cheese. The disease was present on the hard and soft palate, the patches were edematous, lumpy, and covered with a dirty yellow deposit firmly attached to the swollen tissue beneath, and there was slight bleeding on removal. The color of the recent deposit was that of favus scutula, but the older was of a grayish-brown. The disease was removed by the application of a twenty-five per cent. ethereal solution of peroxid of hydrogen. The unusual yellow color may be explained by some observations of Delépine. † On removal of strapping which had been round a fractured thumb for a month new patches of sooty material were noticed, each with an ulcer in the center. This was found to be due to the aspergillus niger. Cultivation experiments showed that the fungus developed best under warmth and moisture, and under these conditions on potato and glycerin agar a bright yellow pigment was developed.

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, January, 1897.

† *Trans. Path. Soc.*, 1891, p. 424, and plates. Abs. in *Brit. Jour. Derm.*, vol. v. (1893), p. 121.

TINEA TRICHOPHYTINA.*

Synonym.—Ringworm.

Deriv.—*Tinea*, a moth, a worm.

The fungi of ringworm, by their presence in the tissues, excite lesions of different aspect, according to the region of the body attacked. The difference in appearance is so great that these regional variations were formerly thought to be separate diseases, and had distinctive names; and although they are now universally acknowledged to be only varieties of ringworm, it is still convenient to retain these names and to describe their clinical aspects separately.

The varieties are tinea tonsurans, or ringworm of the head; tinea circinata, or ringworm of the body; tinea barbæ, or sycosis, ringworm of the beard; tinea cruris seu axillaris, ringworm of the pubic region and axillæ, often called eczema marginatum; and tinea unguium or onychomycosis, ringworm of the nails. The lesions also differ according to the kind of ringworm fungus producing them.

TINEA TONSURANS.†

Synonyms.—Ringworm of the scalp; Herpes tonsurans; Tinea tondens; Porrigo furfurans; Trichonosis furfuracea; *Fr.*, Herpès tonsurant; Teigne tondante; Teigne tonsurante; *Ger.*, Scheerende Flechte.

Tinea tonsurans is one of the most common skin diseases in this country. In my clinic it forms 10 per cent. of all cases, or

* The generic name "herpes," used very generally on the Continent for ringworm, is justified by its derivation, ἑρπειν, to creep, but the term "herpes" is now so identified with the signification of groups of vesicles, and the parasitic origin of the ringworm group is so universally acknowledged, that tinea is more distinctive and expressive of the nature of the disease.

† *Literature.*—For the history of the disease and the prophylaxis and treatment as carried out in France, consult Feulard's "Teignes et teigneux" (Paris, 1886); for *résumé* of English methods of treatment, Aldersmith on Ringworm, 1898; and for pathology, Sabouraud's writings,

taking all varieties of it together, 13 per cent. On the other hand McCall Anderson's public statistics give only 7 per 1000 for the scalp, while all the ringworms together constitute only 14 per 1000; Bulkley's cases altogether were rather over 4.3 per cent., while the statistics of the American Dermatological Association for 1897 yielded only 3.27 per cent. Practically it may be said to be confined to children; and although its direct effects upon the skin are usually insignificant, yet, owing to its being contagious and obstinate and the social ostracism it entails—interfering with education, etc.—its occurrence in a family or school is a real calamity, and it demands the greatest attention from the practitioner.

The modern investigations into the fungi which produce ringworm, initiated by Sabouraud, having in their main lines been confirmed by subsequent workers, it is necessary to treat the clinical aspects of ringworm from the pathological standpoint, and the pathology must, therefore, take the first place in the consideration of the subject.

Pathology.—It has long been undisputed that the varied appearances described under the comprehensive title ringworm are due to the presence of fungus elements in the epidermis, the hair follicles or hairs, or in the nails; but in spite of Grüby's observations in 1843, up to the present decade, it was universally thought that only one fungus was the *fons et origo mali.* Then Sabouraud, with the advantage of modern methods and inexhaustible patience, not only confirmed Grüby's results, but gave them a wide extension, and inspired a host of workers to investigate the subject on the same lines, the outcome of which will now be set forth. The fungi of ringworm may be divided into two main groups, the small-spored and the large-spored, or, the trichophyton microsporon * and the trichophyton

especially "Les Trichophyties Humaines," with atlas of illustrations (Paris, Rueff, 1894); Malcolm Morris' "Ringworm," 1898—a good critical review of modern research, with abstracts of references to recent work. Fox and Blaxall, *Brit. Jour. Derm.*, vol. viii., 1896, is a valuable record of laborious work. E Bodin, "Les Champignons parasites de l'homme," 1902—a good general *résumé* of the subject to date.

*Sabouraud restricts the generic term "trichophyton" to the large-spored group, as the microsporon had "pectinated spore-bearing hyphæ"; but Fox and Blaxall by employing a different method of cultivation showed that when fructification took place in the presence of air, spores

megalosporon. Certain subdivisions of these will be described when each species is considered separately. Some even now think that the position of the fungus in the hair is a question of soil rather than of origin (*vide* Tinea Ciliæ).

Trichophyton Microsporon,* or Microsporon Audouini, the small-spored fungus. This fungus was described by Grüby in 1843 as the cause of "porrigo decalvans," the old name of Bateman for alopecia areata; hence the importance of his observation was overlooked, until Sabouraud showed that Grüby really described it as a cause of one kind of ringworm. It is the cause of at least ninety per cent. of ringworm in England, fifty-two per cent. in Boston, U. S. A., and sixty-five per cent. in France—or rather, in Paris, as Dubreuilh and Frèche did not find it at all in Bordeaux. It is also practically absent in Italy,† and North and South Germany, except Hamburg, where it is uncommon. It is well known in Barcelona (Fergnani).

Two closely similar species have been found on animals, one by Sabouraud and others on the horse, and one by Bodin on the dog, and they have been inoculated on the human subject with clinically and microscopically nearly similar results to the human species, but they all differ from one another culturally in many points. Bodin also has shown that there are two forms of microsporon of the horse which produced a scaly and smooth form of ringworm in that animal. Sabouraud lays stress upon the point that the microsporon is the only one of the ringworm fungi which is capable of passing through a complete developmental cycle with the production of ectospores, while parasitic on the human subject.

"Hence," he says, "it is so extremely contagious among

like those of the trichophytons were produced, and even chlamydo-spores, like trichophyton ectothrix.

* Mr. George Pernet has been working with me for some years at University College Hospital. For a long time he examined nearly every case of ringworm microscopically, and when thought necessary, culturally, and when it is stated that any particular form of fungus is found with special clinical features, it is the result of his investigation. His paper on 130 cases of ringworm is published in *Lancet*, October 1, 1898, p. 868. See also Pernet, *Encyclopædia Medica*, vol. xi., 1902.

† Mibelli has met with one case at Parma due to the microsporon of the dog.

children, and difficult to cure. It grows throughout the hair in a long-jointed mycelium; from this branches pass outwards towards the surface of the hair, and fine branches at length penetrate the cuticle; on these fine branches when they reach the surface of the hair are formed the ectospores, so that the very closely arranged mass of spores seen surrounding the hair in cases of microsporon ringworm is entirely made up of ectospores varying from two to three μ in diameter."

Colcott Fox denies the accuracy of this description, because (*a*) the hair itself is only invaded after the mosaic begins to form on it; (*b*) the cuticle is stripped off rapidly at an early stage; (*c*) he can find no proof of Sabouraud's theory.

The mode in which the fungus gains entrance into the hair substance has led to much discussion. The older and more generally held view was that the fungus entered at the orifice of the hair follicle, penetrated between the shaft and follicle, and passed downwards until it reached the softer cells of the bulb, and was then carried up by the growth of the hair, the mycelium insinuating itself between the hair fibers. This is what Balzer calls the theory " du détour " (see Plate IV.). The other, or direct, theory is supported by Unna, who says that a short distance down the follicle the fungus passes under the cuticle of the hair shaft into its substance, and then extends down to the bulb and up into the shaft. It is probable, therefore, that the fungus may get into the shaft by either route, according to circumstances favoring the one or the other.

Leslie Roberts finds that the fungi have a keratolytic action corroding the outer part of the hair shaft, even in a cultivation. This view is supported by what is known of *onygena equina*, a horn-destroying fungus, which grows on horn, hoofs, etc., and the life-history of which has been worked out by Professor Marshall Ward of Cambridge.*

MacFadyen † finds that the ringworm organism produces a proteolytic enzyme which liquefies gelatin rapidly. It is capable of acting when greatly diluted, and acts best at or near blood heat; it is favored by alkalinity and hindered by acids; it is destroyed at a temperature of 212° F., but ordinarily is very stable.

* *Royal Society*, May 4, 1899; abs. in *Nature*, 1899, p. 92.
† *Brit. Med. Jour.*, September 22, 1894

TRICHOPHYTON TONSURANS.

(Ringworm Fungus.)

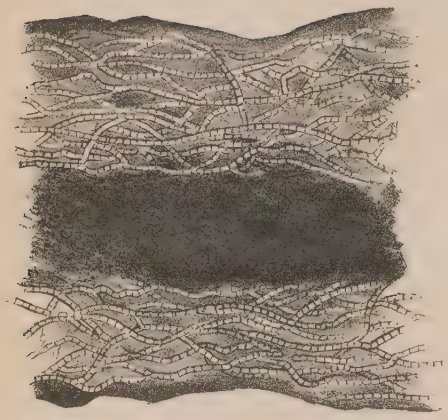
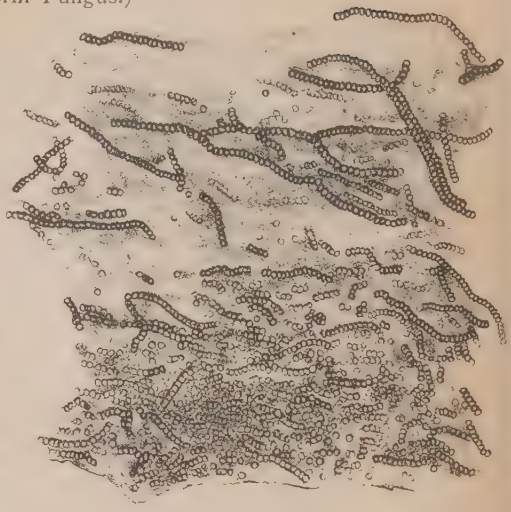


FIG. 2.—An Endothrix. From a case of several years' duration.



Megalosporon.

FIG. 3.—An Ectothrix. From Kerion.

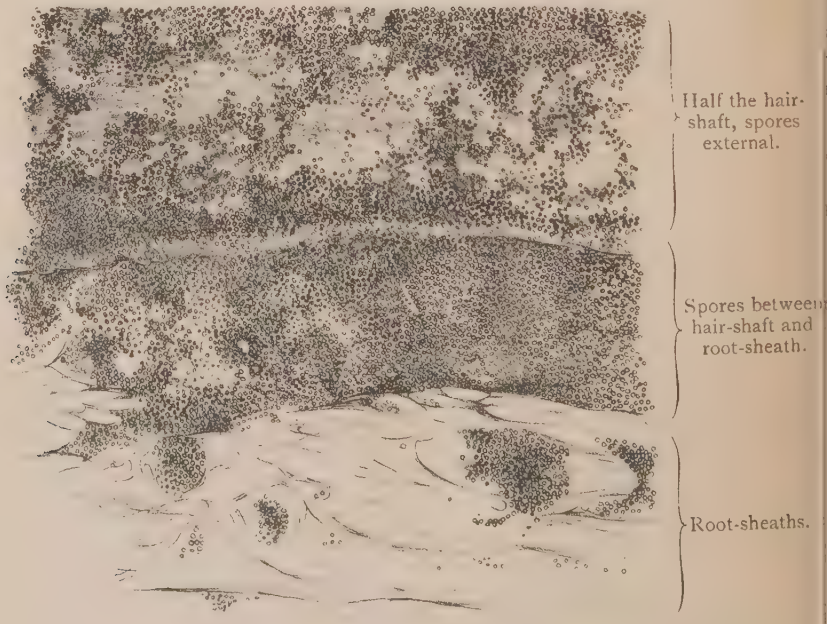


FIG. 1.—Microsporon.

X *Zeiss, DD.*, 10-*in. Tube.*

TRICHOPHYTON TONSURANS.

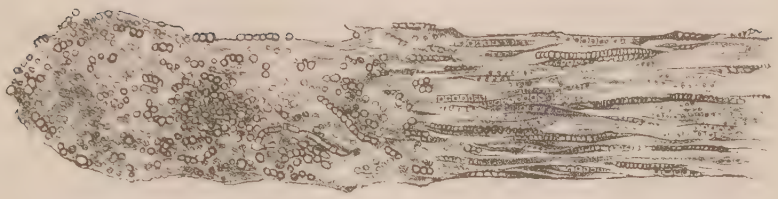


FIG. 1.—Hair from the back of the first phalanx of a finger, in which the nail was affected with Trichophyton Endothrix.

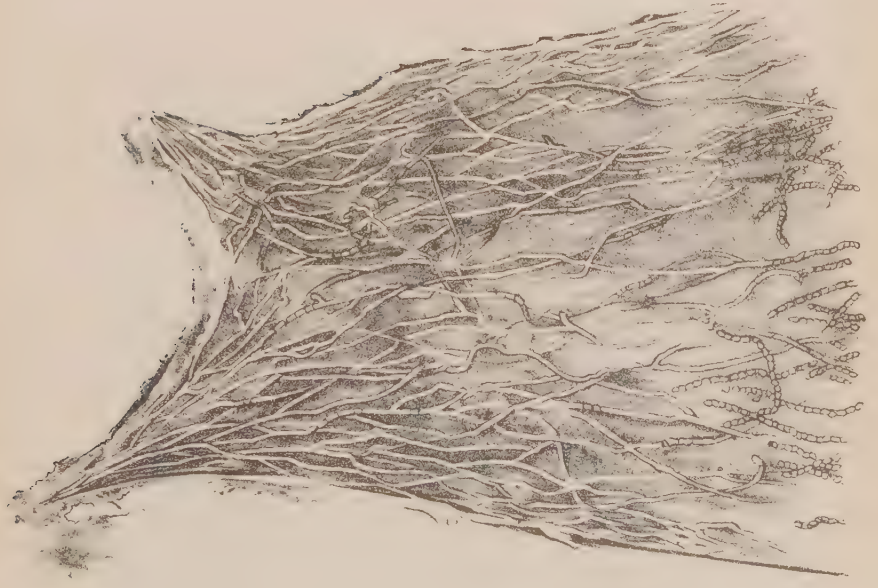


FIG. 2.—Root-end of hair from Trichophyton Endothrix, showing mycelium and commencement of sporulation.

X *Zeiss, DD., 10-in. Tube.*

Waelsch * found that the fungus penetrates the cortex of the hair at different distances in rising and descending, but spares the bulbs. It also forms a reticulum of filaments round the hair. It develops equally well in the deeper horny cells and the cells in process of keratinization in the hair follicle. Waelsch is of opinion that differences of structure determine the differences in the fungus.

Symptoms.—Microsporon ringworm,† which is the type of the disease in England at all events, begins as a red papule round a hair, which soon becomes a small, round, well-defined scaly patch, pale or grayish-red, but covered with fine white scales. It spreads peripherally; and as the fungus gets down into the follicle, by the time the patch is the size of a threepenny-piece, if not before, the hair shows signs of damaged nutrition. The patch continues to enlarge up to the size of a florin, or even a crown-piece, seldom larger, preserving its rounded outline, unless two or more meet and coalesce into an irregular patch with gyrate outline, of almost any size, but with the borders always sharply defined. The larger patches are distinctly thickened and scaly, of a dirty grayish hue, and at first sight bald, but close inspection with a lens always shows that the patch is covered with stumps of hair, dull and lusterless, bent or spirally twisted, sticking out in all directions, instead of having a definite "set," and so brittle that if an attempt is made to pull them out, many break off at or below the surface. They are usually from one-sixteenth to one-eighth of an inch long, sometimes a quarter of an inch, and a white sheath, made up of spores, extends a short distance up the shaft of a good many of the stumps, if the case has not been previously treated.

When a stump has been soaked sufficiently in liquor potassæ, B. P. (*e. g.*, half an hour), and placed under the microscope, it is seen to be ensheathed by round spores, or conidia, of from 2 μ to 3 μ closely pressed together in a mosaic. By pressing gently on the cover-glass the spores of the sheath may be more or less separated, and the hair shaft exposed, and it can then be seen that the spores were outside the hair. By further soaking and pressing a delicate mycelium, running more or less

* *Archiv f. Derm. u. Syph.*, vol. xxxv. (1896), p. 23; abs. in *Annales*, vol. viii. (1897), p. 150.

† Author's Atlas, Plate XCII., Figs. 3 and 4.

parallel with the hair, can be discerned with a high power inside the shaft.

Variations.—In very fair and fine-haired children, instead of the hairs sticking up they lie close to the skin, spirally twisted like the fibrils of wool, almost matted together, and looking dull and thickened, and covered with powdery-looking *débris* of fungus-bearing epithelium, which gives them a white color.

In the same class of children, when the bulk of the disease has been removed, a few pustules may sometimes be seen here and there, in and around which, on close inspection, may be found some remnants of diseased stumps, which have set up the inflammation; but, as a rule, inflammatory signs are inconspicuous in microsporon ringworm. In young infants, where the hair is fine and scanty, and in older children, only where the hair is thin, there are distinct rings, the disease closely resembling tinea circinata. The hair follicles may or may not be involved subsequently, but the disease in this form seldom gives much trouble, as it is superficial. I have seen these rings even in a child of three.

An important but rather uncommon variation of peladoid ringworm, probably of microsporon origin, is what Liveing called **bald tinea tonsurans,** in which the disease commences in the ordinary scaly patches, but after a time the hair in one of the patches falls out, and the scalp becomes as smooth as in alopecia areata, and on the borders of the patch the short, characteristic hairs of alopecia areata may frequently be found. Curiously enough, when one patch takes on this condition the others almost invariably follow suit; but during this transition period the bald and scaly patches may be seen simultaneously, and these are the cases recorded from time to time as alopecia areata, complicated with tinea tonsurans. I have, however, seen patches of alopecia areata develop on the head of a child, with patches of microsporon ringworm away from the original ringworm, but this is extremely rare. Colcott Fox * has also had a case of this kind. When all the patches have become bald the history of commencement in scaly patches will be the only guide to the mode of origin of the disease, though careful microscopical examination of some of the hairs immediately round the patch will generally detect the fungous elements. Many

* *Brit. Jour. Derm.*, vol. xiv. (1902), p. 261.

cases, however, are bald from the first, and some of these occur in families where the rest present ringworm in the usual form. Pea-sized, smooth, bald spots are seen in some large-spored forms in which stumps require to be diligently searched for. In a few cases, microsporon has been found. (See also under Alopecia Areata, in which instances of epidemics of so-called alopecia areata are related.)

Persistent Scaliness.—Another condition that leads to difficulty is where, under treatment, the great bulk of the diseased hairs have been removed or fallen out, and the scalp remains persistently scaly. Such cases are often erroneously considered to be no longer infectious, and allowed to mix with other children, but the disease is still rampant, and careful examination will always find some diseased stumps.

On the glabrous skin the microsporon may occur alone, or, in about twenty per cent. (Pernet), associated with scalp lesions.

It produces, as a rule, far less actively inflamed lesions than the megalosporon. At the same time Sabouraud's statement that the lesions are always insignificant is not borne out by my experience, for, as a rule, the inflammatory phenomena, although mild, are of a decided character, and rings, sometimes concentric, are quite as frequent as solid patches.

It is said never to attack the beard or nails, and on the scalp to be exclusively a disease of early childhood, rarely beginning after eight years old, never after fourteen, and after the age of fifteen is never seen, all adult cases of ringworm of the head being large-spored.

These statements as to age are, in my opinion, too definite except as regards adults. I have recently seen a microsporon commencing on the scalp of a boy over fourteen, and another in a youth, æt. nineteen, who had contracted it from his sister, æt. eleven, in whom it had existed for two and a half years.

Tricophyton Megalosporon Endothrix. So far megalosporon endothrix has only been found in the human subject, and, according to Sabouraud, seventy-two per cent. of large-spored cases are due to this form, of which there are two species: megalosporon endothrix with resistant mycelium (forty-two per cent.), and megalosporon endothrix with fragile mycelium (thirty per cent.).

They have respectively a crateriform and acuminate culture. Whether these figures are true for other countries than France cannot be stated.

In both varieties the characteristic features are mycelial threads composed of chains of doubly contoured spores. This sporulated mycelium is in nearly parallel lines within the hair shaft, commencing at the root, running throughout the whole length, and branching dichotomously from time to time as it grows up the hair shaft, and seldom breaks through to the exterior of the hair.

T. Megalosporon Endothrix with fragile mycelium produces *la tondante peladoide* of Sabouraud, the black dot ringworm of Aldersmith. The chain formation is indistinct; first, the spores are crowded together and of rounded outline, so that in the chains a moniliform appearance is produced. These chains break up easily during examination, after soaking in potash, and thus the moniliform appearance and fragility of the mycelium are distinguishing features. (Plate III., Fig. 2.)

Clinically megalosporon endothrix with fragile mycelium contrasts with microsporon tinea tonsurans in the absence of fine white scales (with rare exceptions), the paucity of stumps and the patches being less definitely circular.

At first sight there is an almost smooth baldness, often affecting a large area from partial coalescence of neighboring patches, but the baldness is not like that of alopecia areata, but incomplete, partially broken up by ill-nourished hair, while the small balder spots from half an inch in diameter show, on close inspection, some of the stumps broken off level with the surface, and only looking like dots; these have no hold on the skin, and when drawn out are a sixteenth to a twelfth of an inch long. A few project from a sixteenth to an eighth of an inch above the surface, but they generally break off if an attempt at epilation is made; still fewer are a quarter or third of an inch long, slightly spiral or curved.

None of them have the white sheath of the microsporon stumps, but are swollen, dull, and brittle. There is sometimes slight redness and crusting, and at others smooth, bald, depressed, pea-sized spots, round which it is often difficult to find any stumps.

Circinate rings on the epidermis are said to precede the hair invasion, but they are fugacious and seldom observed, and when the hair is attacked these rings disappear.

There is no age limit on the scalp in this form, adults in rare instances being attacked.

In T. megalosporon endothrix with resistant mycelium, the mycelium does not easily break up and the segments are square, so that Sabouraud aptly compares it to a ladder. (Fig. 2, Plate IV.)

The clinical appearances are less constant, and while they are easily distinguished from microsporon cases they are not very distinct from the fragile form. C. Fox relies most on the baldness being less pronounced and the unequal length of the stumps, and there being fewer broken off level with the skin, which between the stumps is smooth and apparently normal, but even in the peladoid form, stumps of variable length above the surface are to be found as well as the black dots. Microscopical examination at least would, therefore, generally be necessary to decide the point of which the practical importance is not very great.

One form of disseminated ringworm (of Aldersmith) is also seen with this fungus. Small groups of stumps, sometimes broken off level with the skin, may be scattered about among the healthy hair. There may or may not be small bald areas as well as these scattered foci. Disseminated ringworm may also occur in connection with the microsporon fungus. Endothrix is sometimes pyogenic, and may then produce kerion.

In neglected cases, or in those of very long standing, the great bulk of the disease clears up, and there may be no distinctly bald or semi-bald patches, but in some places the hair looks lusterless and breaks easily, and close inspection alone reveals here and there a solitary stump or small collection of broken-off hairs, scattered more or less over the whole scalp. Such cases require great care for diagnosis and great perseverance in treatment.

T. Megalosporon ectothrix * is of animal origin, though it may be transmitted from man to man. Fox estimates the fre-

* Endo-ectothrix is the more strictly accurate term, for Sabouraud now admits what other observers have found, that the fungus, though mainly outside, may eventually invade the hair substance.

quency of scalp ringworm due to this fungus as "perhaps five per cent.," and confirms Sabouraud's dictum that it produces all cases of tinea sycosis and tinea unguium. Fox also says that it causes more than half the cases of tinea circinata, and reckoning all sites, half of all large-spored ringworms. This does not quite accord with Pernet's estimate of tinea circinata, who, as already stated, found that both forms of large-spored together only produced half the cases of tinea circinata.

So far, however, in tinea sycosis we have only found ectothrix, and in tinea unguium it is also the rule, but endothrix has been found twice by Pernet. (*Vide* Plate IV., Fig. 1.) In another private case of his of twenty years' standing, the endothrix was proved by culture as well as by the microscope.

Clinically the appearances vary considerably, but it is often pyogenic (*i. e.*, can excite pustular inflammation without the intervention of pus cocci); hence it is almost exclusively responsible for all the pustular varieties of ringworm, such as kerion of the head, tinea sycosis, and what was described by Leloir as *conglomerative pustular folliculitis*. This fungus is derived directly or indirectly from the horse, cat, dog, calf, pig, and sheep, etc. It also produces many dry forms of tinea circinata, including probably all the cases which sometimes cover large areas with complicated patterns,* even when there is no vesiculation or pustulation. There is generally, both on the scalp and smooth skin, more marked inflammation than is usually seen either in microsporon or megalosporon endothrix; but in some cases, on the other hand, the inflammation is of slight degree. In a lady who contracted T. circinata on the nose and cheek there were distinct scaly rings, not more marked than on an average microsporon case, while on the chest the border of the rings were an eighth of an inch wide and looked excoriated.

Microscopically, the fungus is limited to the intra-follicular region, with the possible exception of a few mycelial threads which extend a little higher up. It forms a sheath between the hair and the follicle, but it may to a slight extent also invade both structures, but nearly all of it is attached to the epilated hair.

As Fox describes it the spores are agminated in chains,

* *Vide* Author's Atlas, Plate XCIV., Fig. 4, and Danielssen's Plate XX.

but the sporulation is less regular than in endothrix, and the threads in contact with the root sheath are less completely sporulated, longer and smaller than those in contact with the hair. In the latter the mycelium is rectilinear and runs parallel with the hair, is sometimes fragile and sometimes resistant.

In all other respects the microscopical appearances vary greatly except in the same case, or in cases from the same source. Thus the spores may vary from four to twelve μ in length, and about two-thirds of the length in their transverse diameter.

The smallest being thus not larger than many microsporon elements, and although their external position as regards the hair would be a guiding point, some observers, like Malcolm Morris, contend that this feature is more accidental than vital.

In ectothrix mycelium with such small spores the dichotomous divisions of the mycelium would be guiding points, and in a few cases, culture would be the only way to decide the character of the fungus.

The great variability in size and other microscopical appearances is readily explained, if Sabouraud is correct in saying that there are nearly twenty species of ectothrix recognizable by culture, etc. Some forms have nucleated giant spores. These have been several times observed by Pernet and myself in some of my private cases of tinea circinata tropica. (Fig. 93.)

Kerion may be defined as a pustular folliculitis of the scalp excited by the ringworm fungus, chiefly T. megalosporon ectothrix. Analogous lesions with a different name may be seen both in the beard and glabrous skin. Commencing usually with bright red spreading circles, but, according to the mothers, sometimes with scaliness, every follicle in the patch becomes the seat of a pustule, and the acuteness of the inflammation and the close aggregation produce a well-defined, considerably raised, convex patch consisting of pustules on a deep red base, the whole mass fluctuating, and bearing a superficial resemblance to a carbuncle, for which it is often mistaken, but there is no induration round the patch, nor deep purplish redness. The hairs are loosened in the follicles by the suppuration, and are easily withdrawn, and eventually fall out, and thus effect a natural cure; after their removal, pressure gives exit

to a thick glairy mucus, more or less mixed with pus, but there is never any slough, though subcutaneous abscesses occasionally supervene, and in severe cases permanent baldness may ensue, and even keloid may result. In a case that came under me, enormous comedones, many of them double, studded the surface where the kerion had been, hair being quite absent, the surface being extensively, and, in places, hypertrophically scarred.

Although the pyogenic ectothrix, chiefly from the horse, Sabouraud says, occasions most cases of kerion, some observers, as Adamson, C. Fox, M. Morris, and Given, have found the small-spored fungus in relation with it. Fox and Blaxall have five times found the megalosporon endothrix, and Macleod has found it also in a typical case. So far that has not been my experience, except where it has been produced artificially, as sometimes happens with oleate of copper, but even with strong irritants it cannot be excited at will. On the other hand, Pernet took great pains to trace it to the horse, but never obtained proof of such a connection, though it seemed probable in some cases.

The **granuloma trichophyticum** of Majocchi is only a form of kerion, either on the scalp or elsewhere, in which the elevation of the lesions is greater than usual. Several of the cases have been traced to a bovine origin. A separate name is superfluous.

A closely analogous condition to kerion occurs on the glabrous skin, and was described by Leloir as "conglomerative pustular perifolliculitis." * Sabouraud has proved that it is due to trichophyton megalosporon ectothrix, and Leloir's unwieldy title may therefore be dropped, and it might well be called kerion of the glabrous skin. It occurs chiefly on the backs of the hands and forearms, and occasionally elsewhere, in the form of one or two (seldom more) oval or roundish patches from half to three inches in diameter, and raised from a line to a quarter of an inch. The surface is smooth, or slightly mammillated or cribriform, the orifices being filled at first with pus, for the small hairs have usually fallen out.

There are also numerous unruptured superficial pustules.

* *Annales de Derm. et de Syph.*, vol. v. (1884), p. 437, with plates.

The orifices enlarge to the size of a hemp seed, and pus exudes on pressure.

In a still further stage a phlegmonous condition supervenes, the whole fluctuates to some extent, and often sanious pus can be pressed out, and its resemblance to kerion is obvious.

There is some itching and heat, but no pain or enlargement of the neighboring glands, as a rule. Its development is acute, and it may reach its acme in a week, and when it heals under treatment seldom leaves any permanent scar. It generally occurs in those who have to do with animals, especially calves, such as butchers and drovers.*

The treatment is the same as for kerion. Press out the pus, and if any of the holes are large enough, syringe out with carbolic acid lotion one in forty, and rub in an ointment of sulphur. ℥j, acidi carbolici ʒss, adipis ℥j.

Impetigo contagiosa may supervene as a complication either from scratching or from injudicious, irritating treatment in the spreading stage, setting up eczematous inflammation, and then the pus may accidentally become inoculable. If the impetigo contagiosa is not arrested at once, the pus spreads the ringworm in the most disastrous way over the scalp. This is what Aldersmith calls "recent pustular ringworm," and is quite distinct from kerion.

A. Giletti † has described a case of primary trychophytiasis of the mouth. It affected the lips, buccal mucous membrane, and tongue, and clinically closely resembled lichen planus of the mouth. He refers to Robinson and Cutler's case, shown to the New York Dermatological Society.

Etiology.—Ringworm is indisputably contagious and propagated by the transference of the fungus elements to the scalp or body, either directly from child to child, or through the

* In the case of a packer observed by Pernet in my clinic (*Brit. Jour. Derm.*, vol. xii. (1900), p. 415, and vol. xiii. (1901), p. 98, the agminated folliculitis of the forearm was thought by the patient to have been due to unpacking Japanese goods Several fellow-packers had been attacked in the same way. Cultivations of the fungus showed it to be trichophyton meg. ectothrix. There were no other pustular lesions anywhere, and the culture was pure from the first, showing the pyogenic nature of the fungus. Pernet could not find fungus in the reeds used by the Japanese for packing.

† Turin, 1895, published by Fodratti and E. Lecco.

medium of brush or comb or other contaminated article that the diseased and the healthy child have come in contact with. The horse, dog, cat, cow, pig, sheep, rabbit, and even birds, are also liable to it, and have transmitted it to man, and *vice versa*, but the body is more often affected than the head from this source. It is possible that, where many affected children are congregated together, the fungus may be conveyed by the air alone.

There is but little difference in the liability of the two sexes. In six hundred cases of the scalp there were about six per cent. more boys. With regard to age, the youngest cases I have met with were nine days for the disease on the scalp and one week for the body; in the other direction, practically the liability to tinea tonsurans ceases about the age of puberty, and it is much more amenable to treatment in children of thirteen or fourteen.

This limit is more definite for microsporon than for megalosporon. Although I have seen a good many cases in which microsporon has begun between fourteen and fifteen years, it is certainly uncommon, and I can recall only one case commencing as late as nineteen. It is probable, however, that in neglected cases it persists indefinitely.

The two following examples of persistence may have been really megalosporon cases, as they came under my notice in the 1880 decade; but even if they were, they would be noteworthy, as Sabouraud says the large are not so persistent as the small spored cases.

In a woman of twenty the disease had existed from the age of ten years, and it was in the disseminated form all over the head.

In a lady, æt. eighteen, it had been present ever since she was four years old, in the form of several small foci of diseased stumps scattered about. She had had much skilled treatment, but it had probably been intermittent. I saw her at long intervals for three years, and she was not, therefore, cured until she was twenty-one.

I have several times seen ringworm commence in the nape and extend into the scalp of an adult, but without producing any apparent change in the nutrition of the hair, but whether large or small spored I am unable to say. No case, definitely

proved to be microsporon tinea tonsurans, has been recorded as commencing in adults, my own case of nineteen years being the oldest so far.

On the other hand, large-spored ringworm commencing on adult heads, although rare, has been repeatedly recorded by numerous observers. It is generally of the peladoid form due to megalosporon endothrix. I can only recall three cases in my own practice, one æt. thirty-four, another fifty-three, and the third fifty-five.* On the other hand, tinea circinata, both micro- and megalosporon, may occur at any age, but it is uncommon after fifty, and is then usually ectothrix.

Malcolm Morris advanced the opinion that tinea tonsurans was more common and obstinate in fair-haired children. It is undoubtedly more common in fair children, but simply because fair children predominate in this country. In investigating this point, the color of the hair and eyes was noticed in five hundred children, taken consecutively at the East London Hospital for Children; then a record was kept of the same points in four hundred cases of ringworm, taking golden-haired, light brown, and the few red-haired children together as fair, and the rest as dark; it was found that there were 82.4 per cent. fair and 17.6 per cent. dark, while in ringworm there were 82.6 per cent. fair and 17.4 per cent. dark—a curiously identical proportion. I have not been able to observe that the disease is more obstinate in fair children than dark, but Leslie Roberts says that pigmented hairs resist the keratolytic action of the fungus better than unpigmented hair, which would lend some support to the theory.

There is no known constitutional or other condition of the patient to be made out that predisposes to ringworm, though these is no doubt that some people are more susceptible than others, *i. e.*, that their skin or hair follicles offer some special advantages for the cultivation of the fungus. No doubt, too, it flourishes more readily in badly nourished children; but, on the other hand, I have met with it in an extremely developed and obstinate form in perfectly healthy children, both fair and dark; so that, while it is always right to attend to any defect of the general health, I could never convince myself that the progress of the disease was materially influenced by such meas-

* In this case Pernet found endothrix by the microscope and by culture.

ures, and Tilbury Fox's dictum that children with ringworm dislike fat, and similar statements, are, I believe, fallacious.

The reason that ordinary or microsporon ringworm of the scalp does not occur in adults, and that the bald form of ringworm is seen in a certain number of children, is, I believe, due to the greater resistance of the hair to the invasion of the fungus in adults, and in some dark-haired children and others, so that, while the fungus may pass down into the follicle and interfere with the nutrition of the hair, it does not penetrate the shaft. The way in which the fungus attacks the hair, whether through the cortex, as microsporon most frequently does, or round by the root and then upwards in the shaft, as in megalosporon, may account for the occasional appearance of the large-spored ringworm in adults. That it is not merely a question of age is shown by the fact that megalosporon ectothrix ringworm attacks the beard, and there the fungus often penetrates into the hair shaft, although it is in the main outside.

Diagnosis.—There are few diseases of the skin in which errors of diagnosis are so frequently made as in ringworm of the scalp. Such errors are often most serious in their results to a school or other community of children, and bring, therefore, the practitioner into disrepute. To avoid this it is necessary not only to know the aspect of typical cases—which, indeed, the laity themselves can often recognize—but the variations already enumerated. It is also necessary to remember that the amount of inflammation excited by the fungus is very variable and may mask the primary condition, and that familiarity with the diseased stumps, under all conditions, is an indispensable requirement. In a few doubtful cases the skillful use of the microscope can alone decide the question, though if all the points to be described be borne in mind, this will rarely be absolutely necessary, except to settle whether a case is really cured.

In an ordinary way it may be said that loss of hair on scaly patches in the scalp of a child means ringworm, and close inspection with a lens in such a case will almost invariably detect the characteristic, browsed-off stumps of hair, bent, broken, twisted, and sticking out in all directions, or with the appearance described as occurring sometimes in fair-haired children, under Microsporon Ringworm.

The main naked-eye distinctions between microsporon ringworm and megalosporon ringworm are, in the case of the latter, the much smaller number of stumps, many of them broken off level with the skin; the scantiness or even absence of scales, so that alopecia areata may be simulated; and the outline is often less markedly circular and well-defined, and there may be some unaffected hairs in the diseased area. The distinction between the different forms of megalosporon is of merely academic interest, and can seldom be made without microscopical, and often cultural, investigations.

The following differential features refer to microsporon ringworm only.

The diseases which most closely resemble it are dry seborrhea of the scalp and psoriasis.

In *seborrhea* the scaliness is diffuse, and never in sharply circumscribed patches, and though there may be some slight loss of hair, it is in the form of general thinning, and there are never any broken-off stumps; moreover, in children, simply scurfy seborrhea is not so common as in later life, while ringworm is practically limited to childhood.

Psoriasis sometimes offers more difficulties. Of course, if it is present in its usual situations, on the elbows and knees, or elsewhere on the body, no difficulty ought to arise; but the patient's friends do not always spontaneously inform the doctor of this, and in a few instances psoriasis is confined to the scalp, at all events for some time. The patches are circumscribed and scaly, but the scales are more abundant than in ringworm, often forming crusts; moreover, loss of hair is the exception, not the rule, in psoriasis, and there are never any stumps, but great care is required in order to be sure of their absence in fair, fine-haired children.

Eczema cannot be confused with typical cases, but sometimes either from scratching or from irritant applications, ringworm may present some eczematous characters, and the ringworm may be thought to be eczema only. The loss of hair, the circumscribed scattered patches, which are unusual in eczema, ought to excite suspicion, and close examination will then detect the short hairs of ringworm.

The distinction of kerion from *carbuncle* has already been alluded to; and from *impetigo contagiosa*, even when combined

with ringworm, it may be distinguished by kerion being raised and sharply defined, and the pustules are always seated round the hairs. In any doubtful case the microscope should be repeatedly used.

Prognosis.—Although every case is curable it is very difficult to give a correct answer to the anxious question, "When will it be well?" In a very recent case six weeks to three months would be a reasonable time for a cure, though even then it is not certain. For many chronic cases six months is a short and twelve months a fair time, but some cases take longer even in the most experienced and skillful hands, and a large proportion of the cases reported as cured in a month or six weeks are only examples of unskilled observation.

Sabouraud and some of his followers state that the megalosporons are more amenable to treatment than the microsporons. This may be true as a general statement, but its value is largely discounted by the fact that many of the most obstinate cases I have had to deal with have been large-spored, and Aldersmith and others have had a similar experience.

Treatment.—The theory of this is simple, viz., to destroy the fungus which is the cause of the disease; but, though parasiticides are numerous and sufficiently powerful, it is found in practice that while the cure of this disease is very easy, as a rule, when the disease is only on the body, where it can be easily got at, it is very difficult to cure on the scalp, where the problem is how to get the parasiticide deep enough to reach the fungus, which often grows down to the very bottom of the follicle.

Tinea circinata is generally curable in a week or two by almost any of the recognized parasiticides. The scales should be removed (unless the eruption is on the face) by means of soft soap and a piece of wet flannel, and the patch, if in a covered part, painted with tincture of iodin, or acetic acid, or sulphurous acid; or hyposulphite of soda ʒij to ℥j of water may be applied on lint covered with oiled silk; an improvement on this is to soak the skin first with the hyposulphite of soda solution ʒss to ℥j, and then with a tartaric-acid solution gr. xv. to ℥j. The result is the development of nascent sulphur and sulphurous acid on the skin itself, and in it, according to the degree of soaking with the lotions. Or one of the following ointments may be rubbed in three times a day—sulph. sublim. ʒss,

acidi carbolici ♏xx, lanolini ʒvj, ol. olivæ ʒij; cupri oleatis ʒss, lanolini c. oleo ʒj; hyd. ox. flav. ʒj, lanolini c. oleo ʒj. In an infant very weak preparations are sufficient, such as ung. hyd. nit. dil., or hyd. ammon. ʒss, to ʒj of lanolin or lard.

On the other hand, in so-called *eczema marginatum*, especially when contracted in tropical climates, very powerful and penetrating parasiticides are required in some cases, though there is no harm in trying milder preparations at first. After thorough washing with soft soap, the nascent sulphur treatment just described should be thoroughly applied under oiled silk. In tropical and more obstinate cases Goa powder, or its active principle, chrysarobin, is one of the most actively effectual remedies; it may be used as an ointment—chrysarobin gr. x to ʒss, lanolin ʒiij, adip. ʒv; or a piece of flannel moistened with strong acetic acid may be dipped into Goa powder and well rubbed on; or half a lemon may be dipped into the powder and used in the same way.

The disagreeable effects detailed while describing the use of this drug in psoriasis may ensue, and patients should be warned of this possibility, and the remedy should not be resorted to, therefore, until milder measures have failed, such as oleate of mercury, oleate of copper, and many other remedies mentioned in the treatment of scalp ringworm; but in all cases a perfect cure should not be hastily inferred from the absence of diseased appearances, as some living spores may remain in the epidermis ready to spring into activity as soon as parasiticide remedies have been discontinued, or when the weather or climate is warmer, to the disappointment of both patient and doctor; every case, therefore, ought to be carefully watched for some time, and the slightest return immediately and vigorously treated. R. W. Taylor recommends hyd. perchlor. gr. 2, tinct. benz. co. ʒj, to be painted on daily.

The treatment of *tinea tonsurans* remains the opprobrium of the dermatologist's art, from the difficulty experienced in carrying the parasiticide deeply enough into the follicle. As in all obstinate diseases, a legion of remedies are put forth as certain and speedy cures. I know of only one certain remedy, namely, *perseverance*. The most common source of failure is intermittent treatment; the friends relaxing their efforts, or feebly trying all the so-called cures recommended to them by their friends.

There is no case which cannot be cured, though too often success is only attained after a long course of treatment, and it may happen that when success is in sight the patient is taken off to someone else, who reaps the fruits of many months of labor and gets all the credit. The consolation lies in the truth of the proverb, "Hodie tibi, cras mihi."

It will serve no good purpose to enumerate all the plans of treatment which have been brought forward even in the last ten years; a sketch will first be given of the general means to adopt for the cure of the disease, and for the prevention of its spread, either on the patient himself or to others, and then my own experience will be related of the most highly advocated remedies or methods of treatment.

The first thing to do is to cut the hair as closely as possible for at least an inch all round the patch, or if there are more than one or two patches, it is better to remove the whole of the hair, leaving at the most a fringe all round, which, coming below the hat or cap, conceals the tonsure and prevents the patient from attracting too much attention. Whether the hair should be cut as closely as scissors can cut it, or shaved, is immaterial, but cutting is more convenient, especially as the process has to be repeated every few days. If shaving be employed Calvert's carbolized soap should be used, and the brush cleansed with carbolic lotion, 1 in 20, otherwise the shaving brush may disseminate the disease, or a fresh pad of absorbent wool can be used each time, instead of a brush. The object of removing the hair is twofold: it enables the diseased area to be more easily got at, and also any fresh focus of infection can be at once detected, when prompt treatment may effect a speedy cure, for when the hair is long the early lesions often remain undiscovered until the fungus has got deeply into the follicle, and is difficult to reach.

The parasiticide should be applied, not only on, but round the patch, and great care must be taken to get it into the tissues as deeply as possible. If it is a lotion it should be dabbed on or brushed in, for some minutes; if an ointment or oily fluid it should be well rubbed in, at least twice a d[illegible]. With regard to washing, some difference of opinion has been expressed. Aldersmith and Malcolm Morris consider that when ointments are used washing should be done not more than once a week,

as it removes the ointment and prevents it penetrating so deeply. The chief objection, in my opinion, is, that if care be not exercised in drying the head, the disease may be transferred by the towel from one part of the head to another. The head should be dried, therefore, by pressure, and not rubbing with the towel. Thymol or other parasiticide soaps have a slight advantage as detergents. Morris recommends cleansing with spirit and ether to dissolve fatty substances and dehydrate the tissues, and thinks that water favors the development and spread of the fungus.

When the child is old enough—that is, over six years—epilation is a valuable adjunct; it should not be done until after treatment has been employed, either to loosen the hairs or to deaden sensibility. The latter may be effected by glycerin of carbolic acid, or cocain ten per cent. in lanolin, the hairs may be loosened generally by oleate of copper, or soaking with solution of salicylic acid gr. v. in ether ℥j, and other means to be enumerated. The epilation should be performed systematically; a square quarter of an inch or more should be cleared each day, according to the child's endurance.

When the child is eleven or twelve, and the part has been thoroughly numbed, Duckworth's large epilation forceps may be used at first, and a considerable area quickly cleared. Large numbers of hairs break off doubtless, but many are removed; the process is painful, and this plan is therefore only suitable for a small number of cases. When the hairs that have been broken have grown up again they must be attacked individually with a finer pair of forceps, and pulled out carefully in the direction of their set; with care, vast numbers of hairs may be removed, but there will always be some too brittle for this plan to be completely efficacious. The parasiticide should always be applied immediately after epilation. When the child is young or nervous this valuable adjunct has to be dispensed with.

To prevent the disease spreading on the child itself all scales should be removed by soft soap, preferably carbolized, and the head should not be brushed, as that sows the spores broadcast over the scalp; on the whole, too, oily preparations are preferable to watery ones, to prevent the spores being carried from one part of the head to another, or from contaminating the atmosphere; for this purpose, carbolized oil one in twenty

should be rubbed over the whole of the scalp, while the stronger application is used for the patches themselves. The lining of all hats and caps that have been worn should be taken out and burned, and tissue paper put in their place, and this can be thrown away daily; the caps or hats themselves should be renewed at least every month, while the stuff caps which have to be worn continually should be thrown away even more frequently. The child should be isolated from others as far as possible, but where this is impossible the patient must constantly wear a light cap of some kind lined with tissue or oiled paper, which must be changed daily, and no close contact with other children allowed. The healthy children's heads should be washed two or three times a week, and of course the diseased and healthy should not be allowed to use the same comb, brushes, or towels. When these measures have been rigidly carried out I have never known the disease spread to others, even when they have lived in the same room. The parasiticide applications, and the best means of making them penetrate sufficiently deep, remain to be considered.

The introduction of lanolin as a basis instead of lard or petroleum fats is an improvement for ointments, but it is too sticky by itself, and it is better, therefore, to add a fourth part of olive, almond, or heavy paraffin oil, or to combine it with lard as ʒv to lanolin ʒiij. The base I use most is lanolin ʒv, parolien (a heavy paraffin oil) ʒiij. This mixture of oil and lanolin is therefore intended to make up the ounce in all the formulæ of parasiticide ointments; other solvents, each advocated by its author as *the plan*, have also been suggested, and are of certain utility, but fall far short of infallibility.

These solvents are—chloroform, ether, benzol, turpentine, potash, and soft soap; in one of these menstrua the parasiticide is dissolved, and applied in the manner considered most suitable; all are successful in some cases, none are so in all, and unfortunately, we have no data on which we can rely, which enable us to predict whether any particular remedy will or will not succeed. One great source of fallacy is this, that when the disease is recent most of the proposed methods are successful, and likewise when the case has been worried at for months with various parasiticides, and then goes to a fresh doctor, his favorite formula will probably score another success, and impress his

mind with its wonderful efficacy. Not a few old women's and barbers' nostrums have obtained their reputation in this way, but their failures are never recorded. Pessimistic as these statements appear, they are intended not to discourage the practitioner, but to point out that the road to success is to be sought, not in this or that formula, but in perseverance with the various measures indicated, coupled with the employment of parasiticides, which are not to be hastily changed if there is any progress at all, such progress being looked for month by month rather than week by week. For some years past I have endeavored to test almost every method advocated by anyone of reputation, or in which the method itself offered anything like a chance of success. Twenty or thirty consecutive cases have been put on the treatment for at least three months, and then an endeavor made to form an opinion of its merits; the matter, however, is too complicated to allow of anything more than a statement of the impression made on my mind by it, but where good authorities have come to a different conclusion their views will be stated. The ground will be cleared by first describing the treatment that will suit simple cases.

In infants of a few weeks or months old the disease is almost as easily cured as tinea circinata; a good formula is sulphur ʒj, acid carbolic ʒss, lanolin c. oleo ʒj, or ung. hyd. oxid. flav. ʒj to ʒj; the sulphurous acid or hyposulphite of soda lotions previously mentioned, if continuously applied, or almost any of the remedies to be presently described, diluted according to the age of the patient, will effect a cure, remembering always to keep on the safe side, as the skin of young infants is easily excited to intense suppurative inflammation. If one of these parasiticides is rubbed in night and morning, or if lotions are applied continuously under oiled silk, success will generally follow in a month or two, or even less; if the child is under twelve months epilation is unnecessary, and, indeed, impossible. In older children, in recent cases, one of the best applications to cut short the disease is Coster's paint (iodin ʒij, light oil of wood tar ʒvj, the bottle to be shaken before using). It should be firmly applied with a stiff brush; a black crust forms after two or three days, and this should be removed with the forceps, not waiting until it shells off of itself; the part is then to be well rubbed with soft soap and flannel, and the paint again

applied. Two or three applications are almost infallible before the hairs are visibly affected, and even after this it is a very useful remedy, but not suitable for children under four years old. Aldersmith prefers oil of cade, and Morrant Baker creasote, to the light oil of wood tar; they are all equally efficacious, but the oil of cade preparation has the advantage of being thicker. I attach great importance to tearing off the crust, as it brings with it more fungus and diseased hairs than if it is allowed to separate spontaneously. For recent cases blistering is also useful, either with liquor epispasticus or glacial acetic acid, as Aldersmith suggested, the last with the addition of hyd. perchlor. gr. 4 to the ounce. These powerful applications should not be used on strumous children, nor on those under six years old, and it is always wise to do a very small area at a time, as it is never quite certain how much inflammation will be excited, and a permanently bald patch is a perpetual memorial to the imprudence of the practitioner. This caution is applicable to all strong remedies, which should never be used without preliminary investigation of the child's susceptibility. The crust formed by the acetic acid should be removed in two or three days with forceps, and weak parasiticides used for a week before again applying the acetic acid; this plan may be used at intervals during the course of other treatment, but as it is painful it has a very limited application. Formalin is one of the remedies put forward as effecting a certain cure in a few weeks, in which the above caution is needed. I have seen severe scarring produced by its injudicious use. If used at all, a dilution of one of the usual strength to ten of water should be applied and the strength gradually increased. A. Salter, its greatest advocate, used the usual forty per cent. solution, and claimed for it more good and less evil than Aldersmith, Morris, and others could get, and it is very painful. A remedy that I regard as most valuable before epilating, and for a large proportion of cases of all kinds, is oleate of copper, of which Shoemaker and Le Sieur Weir were the earliest and strongest advocates; as a rule, a dram of the pure oleate to one ounce, in the form of ointment, is most generally useful; and where the patient is tolerant, the strength may be gradually increased up to ʒiv to the ounce; and I have used equal parts. In many cases, under its use the diseased hairs drop out, and

leave the part bald and smooth; and even where this is not the case, epilation is generally much facilitated, the majority of the hairs coming out entire and with little pain. In a large number of cases a thorough and satisfactory cure may be effected by its persevering employment, but, like everything else, it fails completely in some cases.

Occasionally a mild kerion is produced by it which is advantageous, but it cannot be produced at will. I often add 10 to 20 grs. of chrysarobin to the ℥j of ointment. It increases its efficacy, but has the usual drawbacks of dyeing the hair, exciting erythema, etc. Five per cent. of pure mercuric oleate is sometimes added with advantage, and some, like Aldersmith, advocate stronger proportions up to thirty-three per cent. of mercuric oleate alone. It should not be used over a very large area for fear of mercurialization.

Chrysarobin has also been used in many combinations. Hutchinson's formula is chrysarobin ℥j, hydrarg. ammon. gr. xx, liq. carbonis deterg. ♏x, lanolin ℥j, adipis recent. ℥vj. Unna's formula is chrysarobin 5 parts, salicylic acid 2 parts, ichthyol 5 parts, vaselin 88 parts, rubbed in vigorously twice a day, and covered with gutta-percha tissue, and the adjacent more hairy parts covered with a zinc-gelatin paste. He claims to get a cure in a month, but his are mostly large-spored cases. The treatment is too severe unless it can be carried out under the closest supervision, and is not suited to out-patient practice in my experience.

Morris rubs in chrysarobin ointment (presumably the B. P., 20 grs. to the oz.) daily for ten minutes, until a red halo is visible, then applies a boric acid or other mild ointment until the redness has disappeared, and then resumes the chrysarobin until the inflammation has again appeared, which takes longer than at first. After three such cycles, if marked improvement has not occurred, he tries sulphur, mercury, or iodin. Duhring also advocates chrysarobin. At one time I used it extensively, but gave it up on account of the frequency of the erythema, swelling, and conjunctivitis produced, as well as the yellow staining (turning an indelible purple after washing) of linen and the hair, while the results were not striking enough to compensate. As, however, its penetration is undoubted, I have tried to get the good without the evil, and have succeeded fairly

by not using more than 20 grs. to the oz., by not using it over very large areas at a time, and by not using it on the anterior portion of the scalp, so as not to excite conjunctivitis; and not to use soap, so that the staining is yellow instead of purple.

In combination with oleate of copper I have sometimes traced the staining of the diseased stump almost to the end of the root.

As the main aim is to produce penetration of the parasiticide I have devised the following plan: Two solutions are prepared. No. 1 is pot. iodatis ʒij, acid. acetici fort. ʒij, aq. destil. ℥iv. No. 2 is pot. iodidi ʒij, aq. destil. ℥iv.

The affected part of the scalp must be shaved (clipping is not sufficient) once a week. The scalp is then soaked with No. 1 solution with a pledget of lint dabbed on for three or four minutes, then while still wet No. 2 is similarly applied. The result is the formation of nascent iodin in the skin. Pernet has several times found iodin staining at the bottom of the hair root. When the epidermis begins to loosen the process of separation should be accelerated with forceps and the treatment renewed. Great improvement results in most cases, in some it has failed, possibly from imperfect application. In a few also it was found to be painful, for, as is well known, some people are very sensitive to iodin applications, while others bear them without inconvenience.

Jamieson recommends the following mode of treating ringworm of the scalp:

(1) Keep the hair shaved or close cut during the entire period of treatment. (2) Keep the scalp clean by washing vigorously twice daily with a fluid superfatted potash soap. (3) The most efficacious application he has found to be precipitated sulphur, ʒj; salicylic acid, β-naphthol, and ammoniated mercury, each gr. x; and lanolin, ℥j. This ointment is to be rubbed in for ten minutes slowly and carefully twice a day.

Another good plan, but more frequently painful than the nascent iodin, is to soak the skin first with acetic acid solution ʒij to ℥iv of water, and then paint on tincture of iodin.

Salicylic acid is another drug, with many friends, either as an ointment ʒj or ʒij to ℥j, or as a lotion gr. 20 to 60 to the ℥j of spirit, ether, or chloroform; both are remedies of some value. I have also tried salicylic acid plaster, which is useful in some

cases, and facilitates epilation. After many trials, the following method has been more successful in my hands than any other. The head is shaved, not clipped, over the affected region, and for at least three-quarters of an inch beyond the patch. Then salicylic collodion (consisting of salicylic acid gr. 10, collodion ℥j) is painted daily for a week, on and beyond the patch. At the end of a week the thick skin formed by the collodion is lifted off by insinuating one blade of the epilation forceps under the skin and gradually lifting up a portion. This is repeated in various directions until the skin is cleared off, and then the scalp is again shaved, and the salicylic collodion reapplied for another week. The advantages are that, with this artificial skin on, the patient is no longer a source of infection, the air is excluded, and as the fungus is aërobic, its development is hindered. The salicylic acid loosens the epidermis, and also the hairs, so that when the collodion is lifted off enormous numbers of stumps can be seen to be adhering to the under surface, and the diseased area is eventually cleared of them. The disadvantage is that the removal of the collodion is somewhat painful, so that it is inapplicable to very young children, but there are few over seven years of age for whom it cannot be used. If the skin is very adherent at the end of a week, a day or two longer may be given; if any excoriation is accidentally produced, boric ointment should be applied until the skin is sound before renewing the collodion.

The principle of excluding air is one extensively adopted since Vidal showed that the fungus is aërobic. Vidal himself cleaned the head with turpentine, then painted on tincture of iodin, and next smeared on iodized vaselin and covered it with laminated gutta-percha. Besnier directs the following: Epilate all round the patch, curette off the scales and stumps, wash it with alcohol with five per cent. chloroform and one per cent. boric acid, again curette, and epilate, then dab it with a perchlorid of mercury solution gr. 1-2 to the ℥j and five grains of glacial acetic acid, and finally seal it over with emplastrum Vigo.

For a limited class of cases croton oil is recommended by Cottle, Aldersmith, and others, and is a most valuable and certain remedy for suitable cases, such as chronic ones of limited area, and for the isolated and small groups of diseased hairs in disseminated ringworm; indeed, for the last form it is often

almost the only resort left, and will cure the most obstinate cases. A drop of the pure oil is put into the mouth of each follicle by means of a needle, preferably a fine crochet needle; or, if there are a large number of diseased hairs, a fine hypodermic syringe may be used. In twenty-four hours a pustule is formed round the hair, which can be removed entire—an impossibility without some such loosening process, as the hairs are so permeated with fungus as to be utterly rotten, and break off within their follicle. The hair is not restored, but the loss is not perceptible when the hair grows round it, unless several hairs close together are destroyed. Electrolysis will also effect the same end, but it is a tedious process for the operator, and will rarely be borne by children under twelve years old, or even older. Croton oil should never be used for strumous children, or for any who are less than six years old, and should be applied very cautiously at first, and never for more than a square half-inch at a time. In a limited patch, where it is necessary to cure in a short time—*e. g.*, to prevent the loss of a presentation to a public school—the quickest way is to produce a mild pustular folliculitis or artificial kerion, and the loosened hairs can then be easily removed. To do this a liniment of one part of croton oil to three of olive oil may be rubbed in, and if this fails to produce pustulation the strength may be gradually increased until the desired effect is reached, the pure oil being sometimes required. If well managed the hair is sure to grow over the diseased part, taking a long or short time according to the severity of the inflammation excited. Feulard utterly condemned croton oil, and says epilation should be employed instead; but it is only as a necessary preliminary to epilation that it should be used. In disseminated ringworm the hairs are so permeated by the fungus that they break off with very slight traction, unless they are previously loosened by suppuration or electrolysis. When, in the treatment of ringworm, either from the sensitiveness of the child or from using too strong a preparation, a serous or pustular dermatitis is produced, the contagium of impetigo contagiosa may be deposited, and the condition called by Aldersmith impetiginous ringworm set up. In the simple inflammation boric acid ointment must be ℥j to the ℥j will soon repair the damage, but the treatment must be prompt, or the secretion in a recent case will

rapidly spread the infection to the neighboring parts. In the impetiginous condition the disease should be treated as if it were a simple impetigo contagiosa; the crust must be softened with carbolized oil and removed, and the diseased area kept well covered with the ammoniated mercury ointment. The impetigo part will soon be cured, and the ringworm must then be attacked with the ordinary remedies, but of a weaker character.

Kerion, to a great extent, cures itself, and most authors suggest very mild measures, such as lead, watery boric acid lotion, equal parts of sulphurous acid and water, hyposulphite of soda lotion, or boro-glycerid, one to two of water, applied on lint under oiled silk; but I prefer sulphur 3j, acid carbolic 3ss, adipis 3j, removing the loose hairs, and I have had such uniformly good results that I never use anything else. However much kerion tumors fluctuate and appear inflamed, they never require incision; the dilated follicles, after removing the hairs, always allow sufficient exit for the fluid, which is more glairy than purulent. The process should be brought to an end as soon as possible, as, although self-curative, it is often at the expense of the life of the follicle, and permanent baldness results.

The question arises, How should progress be judged of? The only real criterion is a diminution of the number of diseased stumps, and no case is safe until they have completely disappeared. The uniform growth of fine downy hair over the denuded patch, which develops into strong, healthy hair, subsequently takes place; but, even though the new hair may have apparently grown all over the patch, the cure must not be assumed unless careful and repeated search has failed to find a single diseased stump, and where there is any doubt as to their condition the microscope must be employed. Persistent scaliness is often regarded as only a sequela of ringworm, and practitioners sometimes write to the journals, saying that they have cured the ringworm; but how can they get rid of the scaliness? This is an error; persistent scaliness in patches always means that the disease is not yet cured, and careful search with a lens will always establish the presence of diseased hairs. Even when repeated and skilled search has failed to find such stumps, and the hair has grown evenly all over the patch, and there is no longer scaliness, there is one precaution which, if omitted, may lead to disappointment, viz., that after apparent

cure a weak parasiticide, such as hyd. perchlor. gr. 3 to lanolin c. oleo ʒj, should be rubbed in two or three times a week for two or three months. For this reason children should not be sent back to school as soon as they appear well, as the bi-weekly treatment is scarcely ever carried out there, and it is very difficult to convince parents even of the value and necessity of this extra precaution.

Onychomycosis. For the treatment of ringworm of the nails, one of the many proposed plans is to scrape the affected nail thoroughly, and then apply sulphurous acid or the hyposulphite of soda ʒij to the ounce of water, on lint covered with oiled silk. This plan is good, but the best in my hands has been the treatment recommended by Harrison of Bristol for tinea tonsurans. Two solutions are prepared. No. 1 consists of liquor potassæ and aquæ destillatæ āā ʒss, pot. iodid. ʒss; No. 2 solution consists of hyd. perchlor. gr. 4, spir. vini rect., aq. dest. āā ʒss. The affected nail should be well scraped, then No. 1 solution applied on lint under oiled silk for fifteen minutes; then No. 2 solution is to be immediately applied on lint under oiled silk for twenty-four hours, when the nail is again to be scraped, washed, and the process repeated. In this way I have obtained cures in cases of very long standing. When the skin begins to peel, and the finger becomes tender, hyposulphite of soda ʒj ad aq. ʒviij may be used until the skin has become thicker again. The same treatment for the scalp requires great care. I have seen most disastrous sloughing from its careless application. It must be remembered, as No. 1 solution evaporates, the cautic potash is becoming stronger every minute, and a powerful caustic solution is produced. Unless, therefore, the medical man can superintend the treatment himself it is better not to trust such a potent remedy in inexperienced hands. But for the nails it is most satisfactory.

The nascent iodin treatment as described under Tinea Tonsurans is very efficacious, and less likely to make the finger sore, but stains the nails. Sabouraud's treatment is to apply constantly a pad of absorbent cotton soaked in a solution of iodin and covered with an india-rubber finger stall. The solution consists of iodin 1 gram, iodid of potassium 2 grams, distilled water 1 liter.

TINEA CIRCINATA.*

Synonyms.—Herpes circinatus; Ringworm of the body; *Fr.*, Herpès circiné; Trichophytie circinée.

This is a very common form of the affection, either alone or in combination with one or other variety. In my clinic it occurs alone in two per cent. of all cases of skin disease, and there are many more associated with tinea tonsurans.

It may be caused by the microsporon or the megalosporon, and as far as my clinic is concerned, Pernet found that in children the large- and small-spored cases were in about equal numbers, while Sabouraud's statement, that tinea circinata was nearly always due to megalosporon, was only true for adults.

Inasmuch as microsporon of the scalp is as ten to one of megalosporon, as is natural, where both the scalp and skin were involved the absolute majority were due to microsporon.

Taking, therefore, all cases on the glabrous skin, whether with or without ringworm elsewhere, the most common form of tinea circinata in this country is due to microsporon, and, as a whole, the inflammatory phenomena are of slight degree.

The Microsporon form may occur in rings or solid patches. The ring begins as a small, pale red, circular, well-defined, slightly raised spot, which soon becomes scaly and spreads peripherally, clearing up *pari passu* in the center, thus forming a ring, the raised border of which is usually papular and slightly scaly. The ring continues to increase in diameter, but without thickening of the border, until it has attained to the size of a shilling to a crown-piece, and when it has attained to its full size either remains stationary, or, the process of involution outstepping that of evolution, the ring thins, then gets broken, and finally the fragments also disappear, and the process is thus spontaneously terminated as far as that ring is concerned. It is common, however, for other rings to form; and if they are near each other, they coalesce, the rings being broken at their point of contact, and a gyrate figure is produced, inclosing sometimes a very large area. There is no attempt at sym-

* Author's Atlas, Plate XLIV. Fig. 1, with concentric rings, is probably microsporon. Figs. 2 and 3 are megalosporon, and so probably is Fig. 4.

metry or any regular arrangement of the rings, but they are more common on exposed parts, such as the face, neck, back of the hands, etc. There may be slight itching or no subjective symptoms at all, and the duration may be days, weeks, or months, when untreated.

The solid patch is pale red, brannily scaly, and enlarges peripherally, but does not clear up in the center. Usually circular and well-defined, it seldom attains to more than one inch

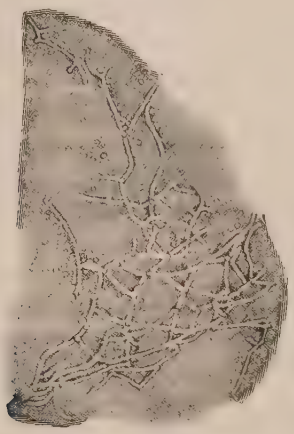


Fig. 91.—Tinea Circinata (Microsporon). Zeiss D. D. 10 in. tube, and reduced $\frac{1}{3}$.

across; it is sometimes irregularly shaped, and the parasitic nature may not be suspected unless more typical lesions are present. The border, however, is always well defined, and the small number and usually unilateral distribution should suggest microscopic examination.

Sabouraud at first said that microsporon on the glabrous skin only caused scurfy spots without redness; but he has modified his views since, and in my experience these are less common than the above description of cases, and very decided inflammation occurs sometimes.

A woman whose child had typical microsporon ringworm on the scalp came to University College Hospital with three half-inch solid patches, very distinctly raised, bright red and scaly in the center, simulating psoriasis with the crust rubbed

off; Pernet found the microsporon fungus. In another microsporon case with rings, he traced it to a kitten.

Concentric Rings. This is rather a rare variation. Unna * records a case of three, and Arning † one of four, concentric rings on the limbs, most commonly at the border of the hair

Fig. 92.—Trichophyton megalosporon.
From an oval patch of tinea circinata on the wrist. Zeiss D. D. 10 in. tube.

at the nape. In one case with three and another with two rings Pernet found the microsporon form, and Bodin traced another to the horse microsporon; but whether they are all small-spored I cannot say. In a case I saw at the East London Hospital for Children, concentric rings and gyrations formed

* *Viertelj. f. Derm. u. Syph.*, vol. vii.

† *Ibid.*, vol. x. p. 98, with photograph; also Plate XCIV., Figs. 1 to 4 of my Atlas. Figs. 2 and 3 were probably large-spored.

the most complicated patterns nearly all over the trunk* of a baby, but the plurality of fungi was not then known, and probably it was large-spored.

In **megalosporon** cases the rings are larger than those above described, or the borders more projecting, and the inflammatory

Fig. 93.—Tinea cruris, contracted in South Africa. Zeiss D. D. ocular tube

phenomena more marked, so that there may be more scaling or crusting, and the border or even the whole patch may be vesicular or even pustular instead of papular; and, speaking generally, the more marked the inflammation the more certainly it is due to megalosporon, and if pustular, it is almost sure to be an

* Plate XX., Danielssen's "Vegetable Parasitic Diseases of the Skin," represents a similar condition, but not quite so elaborate as my case.

ectothrix of animal origin. The extreme form is described under Kerion. Occasionally microsporon may show marked signs of inflammation in the patches, but never pustulation.

Tinea Cruris seu Axillaris,* as the name implies, affects the fork and axillæ, and is a form of megalosporon which used to be called *eczema marginatum.*

In these positions the constant warmth and moisture favor the growth of the fungus, and the inflammation produced is often much more pronounced than that in tinea circinata elsewhere. The primary rings spread rapidly, and soon coalesce, forming pigmented areas inclosed by festooned, papulo-scaly borders. The limits of the disease may extend almost down to the knee, and up to the umbilicus, between and over the nates, and up to the sacrum. The border is distinctly raised, often notably thickened, much broader than ordinary tinea circinata, with thick scales or even crusts from eczematous exudation, and there is usually considerable irritation. Sometimes fresh rings in large numbers form within the festooned inclosure, and in any case there is but little tendency to spontaneous recovery. The disease is seen in its most aggravated and obstinate form in hot climates, where it is much more common than here, and local names, such as Indian, Chinese, or Burmese ringworm and "dhobie itch," have been given to it; but no real clinical difference has been established between the tropical and temperate zone forms of the affection, except that the inflammation may be deeper and more severe and obstinate. The tropical disease called tinea imbricata, or Tokelau ringworm, is a separate affection.

I have had a large number of cases of tinea tropica, chiefly cruris, from all parts of the world. Pernet has examined many of them, and has found that microscopically they varied in appearance, but it was common to find very long slender mycelium, dichotomously branching, but often plain or only showing short segmentation here and there. In other cases sporulation was a strong feature, the segments or spores varying in shape and size, but sometimes they were round. Cultures were made on maltose agar, and they varied considerably. A case of dhobie itch had a pink culture. He came to the conclusion

* Author's Atlas, Plate XCIII., an extensive case.

that they were all large-spored, but probably of different varieties.

Schiff showed a case of a child with tinea cruris and capitis at the Dermatological Society of Vienna; and Waelsch, from culture experiments on two cases, regards the fungus of the head and groin as essentially the same and identical with the third form of Kral, who in three cases found all three culturally different.*

Tropical tinea circinata may occur on any part of the body, chiefly the extremities. Unless recognized early and treated

Fig. 94.—Mycelium from tropical Indian tinea circinata on outer border of foot, of three years' duration. It apparently went away for a year. Zeiss D. D. 10 in. tube. Private Notes, H. 342.

vigorously it may last for years. I have met with cases of ten years' duration and the diagnosis is often difficult, as it may die away in the cold weather and reappear when it is hot.

D. Moukhtar † of Constantinople has called attention to the occurrence occasionally on the palms and soles of tinea circinata, where it is very likely to take a vesicular form at first, and when, later on, the epidermis gives way, it spreads with a raised collar of the horny layer, which may lead to an error of diagnosis. Several cases have been treated in the dry stage

* Neumann's Atlas, Plate LXIX., and Sydenham Society's, Plate XXXVI., are also good examples.

† *Annales de Derm. et de Syph.*, vol. iii. 1892 (several communications). See also Fig. 42, vol. ii., *La Prat. Derm.*, p. 281.

for the later palmar syphilid, while in the earlier vesicular stage it is very like a sweat eczema. The vesicular form would be extremely like dermatitis repens. Mansuroff's* case of *dermatomycosis circumscripta manus* appears to be an instance of this tinea circinata palmæ. Microscopic examination would be decisive if the tinea were thought of. It is probably due to a megalosporon, but the point has not been investigated.

The *treatment* of tinea circinata is given with that for tinea tonsurans.

Herpes tonsurans maculosus et squamosus of Hebra and Kaposi is the disease described in this work as pityriasis rosea (p. 405), and is not dependent on the ringworm fungus.

TINEA BARBÆ.

Synonyms.—Tinea sycosis; Hyphogenic sycosis; Sycosis parasitica; Mentagra parasitica; Parasitic sycosis; Ringworm of the beard; Barber's itch; *Fr.*, Sycosis parasitaire; Trichophytie sycosique; *Ger.*, parasitäre Bartfinne.

Definition.—Folliculitis of the hairy parts of the face, excited by the trichophyton tonsurans.

Ringworm of the beard is generally described as a very rare affection, but this is only true of the more severe or kerion forms, minor degrees of it, corresponding with tinea circinata, being not at all rare in my experience, but their nature is often overlooked.

Symptoms.—The disease begins as an itching, red, round, slightly scaly spot, which may enlarge and form a ring with a clear center, or remain as a scaly, well-defined patch. The border is distinctly raised, and may be papular, papulo-vesicular, or slightly pustular, *i. e.*, a few of the papules may have a pustular point. Other patches usually soon form, and there are generally some hair-pierced pustules, either in or beyond the scaly patches. It is in this form that the disease usually presents itself among the better classes, who shave daily and practice frequent ablutions.

In the more severe, or what may be called the kerion form,

* International Atlas, Plate XV.

although the disease may begin in the same way, the inflammation soon becomes more severe, as in the following typical example.

A robust man, æt. thirty, with reddish-brown beard, stated that the disease began as a red ring, the size of a sixpence, on the side of the lower jaw, after being shaved at a barber's. The ring was soon followed by a scaly patch just above it. Shaving led to a watery discharge, the patches spread peripherally, and the more he shaved the more discharge there was, which soon became partly thick and glairy, partly "mattery." When seen, two months from the onset, the whole of the chin and halfway up the sides of the face and the upper half of the neck were shining, deep red, and swollen, with irregularly lumpy, flattish masses, from half a walnut in size downwards, brawny to the touch for the most part, but with here and there soft patches, some of which had already discharged. The whole affected area was covered with hair-pierced pustules, except where frequent bathing with hot water had caused them to rupture, and there were outlying discrete pustules beyond the confluent area. The hair had been allowed to grow for about a quarter of an inch, and was easily, and almost painlessly, extracted even with the fingers, a characteristic early feature of the disease. Evidence of damaged nutrition of the hairs was not present. The dry, brittle, lusterless, broken or frayed stumps are, in my experience, found chiefly in cases of long standing. The chief sensation complained of was burning and tension, with only moderate tenderness. Between this and the first form described are all grades of severity and extent.

The more severe forms may form convex elevations covered with pustular points exactly like kerion of the scalp.

The disease is more acute in development than coccogenic sycosis, but unless properly treated is almost as indefinite in its duration, and even when apparently cured, will relapse if not carefully watched for some time, owing to some of the spores having escaped destruction. The suppuration also may be severe enough to destroy the follicles and produce cicatricial baldness of the part. This suppuration may be, and at the commencement generally is, solely due to the pyogenic character of the fungus itself, but sooner or later pus cocci invasion occurs, and the features of coccogenic sycosis are mingled with

the hyphogenic, and sometimes remain after the fungi are destroyed and thus prolong the disease. The disease may be associated with or originate from ringworm elsewhere. Thus, in one of my cases, it appeared to have arisen from an eczema marginatum of the fork, this being followed by rings on the

Fig. 95.—A hair from the beard in a case of tinea barbæ. × 700 (Kaposi). *a*, the portion with ectothrix fungus; *b*, the part free from fungus.

face. In another the patient was in the habit of rubbing his chin where the eruption was, with the back of his hand, and on this three rings of minute hair-pierced pustules appeared. Buzzi records the converse of this, in which a man with tinea sycosis gave a typical tinea circinata to his wife, and she to their child.

Etiology.—The disease is generally contracted by those who are shaved by a barber, the fungous elements being probably conveyed by the shaving brush, and not by the razor, as is

popularly believed. Of course it may also be derived from children or animals who are suffering from ringworm; but this is a less common mode. It is more common in young adults than in the elderly, but is independent of the general health, though doubtless some local predisposition, probably the softer texture of the hair of the chin, is an important factor.

Pathology.—The disease is a folliculitis, usually pustular, of the hairy parts of the face, closely resembling coccogenic sycosis, but due to irritation from the presence of a fungus in the follicle. The severity of the inflammation, as compared to that of most cases of ringworm, is due to the pyogenic character of the fungus.

For the mode in which the fungus gains entrance into the hair, see the pathology of Tinea Tonsurans.

The reason that the hairs are loosened in this form and not, as a rule, in coccogenic sycosis, is, as Robinson showed, that in the tinea form, the process begins inside the follicle and separates the follicular walls from the shaft, the inflammation spreading thence outwards, while in ordinary sycosis it begins without the follicle and spreads into it.

The readiness with which the trichophyton attacks the beard is a proof that it is not the age of a patient, but an anatomical change in the hair substance, which prevents ringworm showing itself in the scalp in adults, in the same way as in children.

Sabouraud's researches show that the fungus of suppurating tinea sycosis is always trichophyton megalosporon ectothrix, and of animal origin.

He has described four clinical types, all ectothrixes, but from different animals and with different cultures.

1. The typical kerion type due to the megalosporon of the horse. Culture of white colonies.

2. Superficial moist inflammation in scattered patches of bovine or equine origin. Culture, yellow cribriform or vermicular colonies.

3. The diseased hairs are scattered and have an epithelial sheath over them, probably of avian origin. Culture, pale rose colonies.

4. Like common endothrix of childhood, but of animal origin. Cultures, deep purple.

Three and four are rare in Paris, but Pelagatti finds it to be fairly common in Parma.

5. Bodin adds an endothrix of human origin of which he has had five cases. Cultures, typical crateriform. Lesion was quite superficial in two-zoned, scaly patches, the outer pink and slightly raised. The hair breaks off short, is somewhat thickened, and the hair shaft filled with chains of spores.

Ullman found that histologically in the kerion form there was first perifolliculitis with mononuclear leukocytes, then polynuclear leukocytes appear, which penetrate the root sheaths, distend the cavity of the follicle, and destroy its walls and the sebaceous glands. Giant cells were present. He thinks that the inflammation is excited by toxins.

Diagnosis.—A rapidly spreading folliculitis of the face, accompanied by brawny swelling, irregular lumpiness, loosening of the hairs, and perhaps evidence of their damaged nutrition, should lead to examination of the hairs by the microscope, when the fungus, if searched for carefully, will be found, but not in every hair from the diseased area. Those to which some root sheath is still attached are the most likely to show the fungus. Prolonged soaking in liquor potassæ is usually required, and in some cases repeated examination before it can be discovered.

From *coccogenic sycosis* it differs in its more rapid spreading, the frequency of multiple foci of disease, the greater lumpiness and brawny swelling, and the early loosening of the hairs, which are for the most part extracted without pain or difficulty, and are often without their root sheath.

From *eczematous folliculitis*, which may be even more acute than the tinea, it differs, in that an eczema is less scattered, is more superficial, unless of long standing, discharges serum at first; and even vesicles between the hairs may sometimes be seen. The eruption also is generally to be found in parts where there are no hairs, or at least a history of its having been elsewhere is generally obtainable, the free surface eczema often clearing up and leaving the folliculitis behind. There is an absence of brawny swelling and lumpiness, and the hairs can only be extracted with pain and comparative difficulty, and with their root sheath attached.

Prognosis.—The disease may last for years if the cause is

unrecognized, but is always amenable to appropriate treatment perseveringly employed.

Treatment.—The first and essential part of the treatment is systematic and complete epilation of the affected area. Each day a square inch or so should be cleared of hairs—and, owing to the loosening of the hairs, this is easily effected—and the parasiticide applied immediately afterwards. I do not agree with Jamieson that the acuteness of the inflammation is a contra-indication for the immediate employment of parasiticides; on the contrary, that inflammation speedily subsides when its cause is destroyed.

The strength of the parasiticide need not be so great as that for ordinary tinea tonsurans. The formulæ suitable for kerion are suitable here also, such as oleate of copper ʒss to ʒj; sulphur ʒj, acid. carbolic. ʒss, lanolin c. oleo ʒj; and others are described in the treatment of acutely inflammatory tinea tonsurans. In this way the great bulk of the disease is speedily removed, but watchful care and perseverance are often required for some time, in order to insure complete stamping out of the vitality of the last spore of the fungus. The abscess-like swellings do not require incision, as the removal of the hair is sufficient to allow the pus to escape. Poultices should never be employed, as they favor the spread of the fungus. The milder forms require the same treatment as for tinea circinata, combined with epilation. It has been stated that iodid of potassium internally has a curative action.

Tinea ciliorum, ringworm of the eyelashes, is a very rare affection, only four cases being on record, though probably it often escapes recognition. In one of Mibelli's cases,* a child of six, it was contracted from a cow; the father also had it in the beard. Mibelli found that in the eyelashes the fungus was distinctly endothrix, while in the father's beard it was ectothrix, and as both came from the cow, he argues that it is the nature of the soil which determines whether the fungus is inside or outside the hair; moreover, it would upset Sabouraud's theory that all endothrix is of human origin.

* "Blepharitis Trichophytica," Mibelli, *Giorn. Ital. delle mal. vener. e della pelle, Fasc. III.*, 1894, and *Monatshefte f. prakt. Derm.*, vol. xix. (1894); abs. *Brit. Jour. Derm.*, vol. vii. (1895), p. 64.

The cilia were broken off short, generally concealed by a scale, and there was marked redness and swelling of the lid. In another case, an adult, the cilia were distorted, many broken, and pus round some others. In both cases there was tinea circinata on other parts of the face, which was the key to the diagnosis.

The successful treatment was epilation and the application of a 1 in 5000 perchlorid of mercury.

ONYCHOMYCOSIS.*

Synonyms.—Tinea unguium.

Strictly speaking, this term applies to favus as well as to ringworm of the nail, but the former is very rare and has been described under favus, and only ringworm of the nail has now to be considered. According to Sabouraud, tinea unguium is

Fig. 96.—Trichophyton endothrix of nails. Zeiss D. D. 10 in tube.

always due to the trichophyton megalosporon ectothrix fungus, but Pernet has found endothrix in one of my cases, and in two (sisters) in his own practice. The appearances are very varia-

* Author's Atlas, Plate XC., Fig. 12.

ble. Dubreuilh * says that invasion is usually by the side of the nail or by the subungual epidermic involution, seldom at the free border, and that it is always secondary to an old tinea circinata. It would also occur in childhood from scratching the head if affected with ringworm, and then would enter by the free border. Dubreuilh himself records such a case, a girl with kerion of the head and tinea unguium. It leads to a dirty yel-

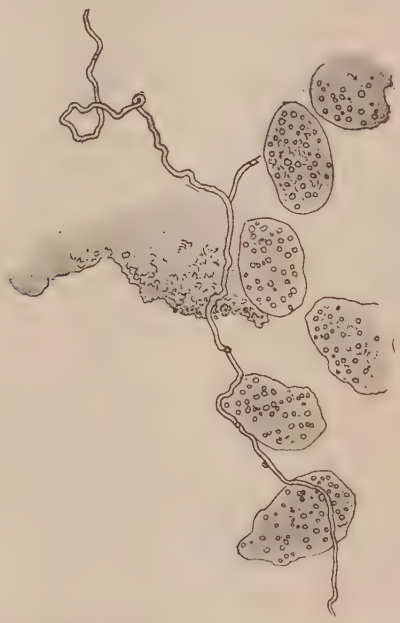


Fig. 97.—Onychomycosis from tinea tropica, affecting toe nails. The disease had been present ten years, and the nails were chipped and crumbled. It was called in India "dhobie itch," and was supposed to have been cured by gunpowder. Zeiss D. D. 10 in tube.

lowish or blackish discoloration of the nail with thickening, due to partial separation of the component layers, chipping and splitting of the free border, dullness or roughness, or a fibrous surface, the surface layers being sometimes exfoliated. Extreme onychomycosis is sometimes seen on the toes, or there may be only opacity and loss of polish.

There may be transverse ridging or longitudinal striation;

* Arnozan and Dubreuilh, *Archives Cliniques de Bordeaux*, February, 1892.

separation from the nail bed sometimes occurs. There is thus nothing distinctive from other trophic changes except asymmetry and chronicity, and unless there is a history of a more characteristic lesion, on the hands or elsewhere, the nature of the affection would probably not be suspected. Ehlers has found it very common in wool carders in Iceland. The disease may last for any number of years.

In one of my cases, a man over sixty came to the hospital with tinea circinata affecting the back of the hand, subsequently two nails, the second and third, became affected, and scrapings showed the same fungus (megalosporon endothrix, Fig. 96). The index finger nail being noticed to be something like the others, he said it had been so from boyhood, and scrapings showed fungus in it also. (Fig. 1, Plate IV., shows a hair from his first phalanx.) In another case a lady contracted tinea of the sole of the foot ten years previously in India, her toe nails had been affected ever since (Fig. 97).

In order to find the fungus very prolonged soaking (twenty-four hours sometimes) of scrapings in liquor potassæ is necessary, and it is better to use a forty per cent. solution. The complete disintegration of the nail substance thus produced is advantageous for finding the fungus. If there is any lesion on the back of the hand the hairs on the proximal phalanges should be examined.

TINEA IMBRICATA.*

Synonyms.—Tokelau or Bowditch Island ringworm (lafa Tokelau); Le Pita; Gune; Cascadöe; Herpes desquamans.

Definition.—A tropical, vegetable parasitic, contagious disease, characterized by the formation of patches of concentric scaly rings.

It is usually said that the first medical description of this disease was in 1844 by Fox in America, under the name of "gune" (native word for skin), but Alibert gives a plate of it from a child from Port Dorey in his quarto of 1832, p. 492.

* *Literature.*—Hirsch's "Geographical and Historical Pathology," vol. ii. p. 375. "Med. Rep. of Imp. Maritime Customs for China," 1879; abs. in *Med. Times and Gazette*, vol. ii. (1879), p. 342. McCall Anderson,

Subsequently it was redescribed by Turner, Köniğer for Samoa, Manson for the Malaccas and China, and Macgregor for Fiji. It is confined to the tropics; and although spread pretty widely over the various groups of islands in the South Pacific, it has been especially prevalent in the Malay Archipelago and the Gilbert Islands, where Fox observed it, and whence it spread to the Tokelau and Samoan groups. It has also been observed in Burma and Southern China. It is most prevalent in a damp equable climate with a temperature between 86° F. and 90° F. and extremes of temperature prevent its extension. The cascadöe of the Malaccas, described by P. van Meederwoort, is evidently the same disease. It has never been seen in England.

Symptoms.—With rare exceptions the disease avoids the scalp, face, and forehead; and even when it invades other hairy regions, the fungus, Manson says, does not invade the follicles, leaving, consequently, the hair unaffected; but Königer * states that the hair on the body (not the scalp) is almost destroyed where the eruption has occurred. Tribondeau says the nails are always spared.

With the exception of the head, it may attack any part of the body; and when it has existed sufficiently long unchecked, it may spread over a whole limb or region, or the entire body surface.

A separate, fully developed patch consists of concentric rings of scales, these rings being about a quarter of an inch apart, and eventually filling up the whole patch, which then looks like watered silk. The scales vary in size up to half an inch square, and are free at their external edges, which are slightly curled, except in old cases, when they become large, thick, and horny, and give the body the aspect of being coated with clay; hence the native name, meaning "clay-skin." "The appearance of comparatively recent patches," Turner says, "may be imitated by taking a sheet of stout cardboard and shaving the upper layer of it in such a way as to make it curl up in circles."

Ed. Med. Jour., for September, 1880, with plates. Manson, *Brit. Jour. Derm.*, vol. iv. (1892), p. 5, with history and bibliography. Nieuwenhuis (Java), "Tinea Imbricata," *Archiv f. Derm u. Syph.*, vol. xlvi. (1898), p. 163, with plate of cultivations. Tribondeau, *Arch. de Méd. Navale et Coloniale*, July, 1899, p. 5; full abs. *Brit. Jour. Derm.*, vol. xi. (1899), p. 400, and note by Manson.

* Virchow's *Archiv*, 1878, Bd. 72, p. 413.

Köniğer describes the disease as beginning "with an eruption of small papules, mostly grouped in circles, which cause intense itching and desquamation round their growing periphery. Afterwards these circular efflorescences coalesce, the skin becoming at the same time hard, dry, and brittle." Tribondeau says that the initial lesion may also be vesicular, with clear or slightly yellow fluid; that rings develop from them more rapidly than from the papules, which he describes as rounded, hard, grayish-yellow with a pale pink border. Patrick Manson has repeatedly inoculated the disease, and thus describes its development: "After inoculation there is an incubation period of about nine days. At the end of this time the fungus has multiplied sufficiently to slightly elevate the epidermis under which it is growing, and form a brown mass between it and the corium. When this has reached a diameter of about three-eighths of an inch, the epidermis in the center gives way; but as it is still organically continuous with the sound skin at its margin, it is not completely shed, but remains as a fringe round the central depression. By friction or other means the free edge of the scale is from time to time removed, and the brown central fungus and the tissue it is mixed with, now no longer protected by a closely adhering epidermis, are rubbed off as far as the attachment of the scale, and the exposed corium appears pale. Just beyond this point the advancing fungus shows through the epidermis as a brown rim, perhaps very slightly elevated, about one-sixteenth of an inch in breadth. When the entire ring thus formed has attained a diameter of about half an inch, a brown patch is again seen to be forming at its center; this, in its turn, also cracks the young epidermis over it, and a second ring is formed inside the first, which it follows in its extension. A third brown central patch is formed in the center of the second circle, and behaves in exactly the same manner, and so on with a fourth, fifth, and a never-ending series of concentric rings," but Tribondeau never saw more than four.

The patches extend at the rate of a quarter to half an inch a week.

The only symptom attending the eruption is the intense itching, and the consequent scratching is an important factor in spreading the disease. Where the scales have come off stains

are left in rings, or sinuous lines of a livid color remain, which are very persistent, and may be permanent. The disease is much dreaded by the natives, but, though very disfiguring, is not injurious to the general health.

Etiology.—The disease is undoubtedly contagious, attacks both sexes at all ages, but especially children, Meederwoort stating that it always begins from the second to the fourth year, but this is only true for a large proportion. It is tropically endemic. Manson thinks it requires special climatic peculiarities for its development.

Pathology.—Köniğer and Manson were the first to demonstrate its fungous parasitic origin, and Manson called the disease and fungus, tinea imbricata. The fungous elements are confined to the epidermic layers, especially the under surface, and do not affect the hair follicles; and according to McCall Anderson (with whose observations those of Manson, made on fresh scales, nearly agree), who examined some of the scales, as compared to tinea circinata the fungus is much more abundant, the chains of spores much more numerous than the mycelial threads, and the spores, though of the same size, instead of being round, are oval, rectangular, or irregular, while the mycelial threads are long, straight, or gently curved; but Siegfried, on the other hand, writing from Amoy, says that the mycelium is large-sized and predominates over the spores, which are sparse. Tribondeau also found abundant mycelium. Nieuwenhuis of Java succeeded in cultivating the fungus on two per cent. agar and five per cent. malt extract and other media, with a slight alkaline reaction. The development was very slow. He and Sabouraud regard the fungus as a large-spored trichophyton, very like European animal trichophytons. Pernet, from material sent him from Pahang, describes the fungus as consisting of masses of interlacing mycelium, some plain, but most with short, thick, round segments, and dichotomous branching. The spores were numerous, scattered about in rows and clumps.

Diagnosis.—This would offer no difficulty in the regions where it is endemic. The concentric scaly rings which tend to fill up the central area, while the outer ring is spreading peripherally, differ completely from *tinea circinata*, in which the central area clears *pari passu* with peripheral extension, except in a few cases

which were described under Tinea Circinata, but even then there would not be the flaky scaliness and the pigmentation.

Treatment.—Although the fungus is quite superficial, this is more difficult than might be expected. The clothes and other coverings should be destroyed or disinfected. The scales should be removed by alkalin or sulphid of potassium baths, and then Manson recommends linimentum iodi, double strength, painted on to a limb or other portion of the body, and extended each day. Other methods of treatment would be the same as for the more obstinate forms of tinea circinata. Goa powder or chrysarobin, applied as there directed, is one of the most efficacious means of cure. It is best applied after a hot soft soap bath followed by pumice-stoning. Relapses, especially when the dirty belongings are retained, must be watched for and promptly dealt with.

TINEA VERSICOLOR.

Synonyms.—Pityriasis versicolor; Chloasma (old name); Mycosis; microsporina; *Ger.*, Kleienflechte.

Definition.—A vegetable parasitic disease, situated chiefly on the trunk, which is characterized by patches of various sizes, shapes, and shades of brown color.

This disease is more common than might be inferred from dermatological statistics, which in England and America give rather more than 1 per cent., Hublé, in France, having found it in 68 per cent. in examining over two thousand healthy young soldiers; in my own clinic it is less than 1-2 per cent., while in Duhring's it is over 2 1-2 per cent., and in the hot countries of the East it is very common.

Symptoms.—Practically it may be said to be confined to the trunk, though in a few cases it extends a little beyond, to the neck, thighs, and arms, and even to other parts.

It occurs either in discrete, roundish spots or patches, of the size of a split pea and upwards, which may remain separate and be scattered freely over the body, but more frequently they coalesce into large, irregularly outlined tracts, which may cover the whole trunk, but generally more on the front than the back. Discrete patches, in greater or less numbers, are usually scat-

tered beyond and between the main tracts; the extent, however, is very various, and there are all gradations, from one or two moderate-sized patches upwards, but the bulk of the disease is generally on the chest, abdomen, and interscapular region.

The patches are usually of a fawn color or some other shade of brown. The edges are sharply defined, especially where they are extending, but scarcely perceptibly raised above the surface, which is usually slightly furfuraceous, unless sweating is profuse, when it may be smooth and greasy to the touch. On scratching it with the nail much of the discoloration can be removed, either in scales or rolls, for the growth affects chiefly the superficial epidermic layers. Itching may or may not be present, but it is seldom very marked. The patches spread slowly, as a rule, but may extend rapidly in a very congenial soil. If untreated, it may last indefinitely, and it has a great tendency to relapse after apparent cure.

Variations.—In a few cases the disease extends for some distance down the limbs; I have seen it in the popliteal space three times and on the elbows twice; and Dubois-Havenith observed it covering almost the whole of the arm and forearm to the wrists, and over the neck. It may even affect the face, though it is rare for it to extend beyond the covered parts. Thus Biart * of Nebraska records a case of a man in whom there were pea- to finger-nail-sized patches on the left cheek up to the external canthus, and a continuous band over the greater part of the forehead, which encroached slightly on the scalp; there was also a spot behind the ear, while on the trunk it was very extensive, and reached down both arms, on the right extending to a little below the elbow. Payne also found the microsporon furfur abundantly in the scales from the scalp and beard, where apparently there was only a simple pityriasis, but the patient had had tinea versicolor on the trunk for some years. In Assam A. Powell † says that it is very common on the face; he ascribes this to the fact of the natives rarely using soap.

Gottheil ‡ relates the case of a Cuban medical man, who had black spots on his left palm for fifteen years. The lesions con-

* *Amer. Jour. Cut. and Ven. Dis.*, vol. iii. (1885), p. 73.

† *Lancet*, December 30, 1899, p. 1809.

‡ *New York Med. Rec.* July 1, 1899, p. 15. Abs. in *Brit. Jour. Derm.*, vol. xi. (1899), p. 403).

sisted of discrete round macules in places running into slightly scaly patches of a dark brownish-black color. Microsporon furfur was diagnosed from microscopical examination. A. Coffin met with the case of a woman who contracted it from her husband seven months after marriage, and the patches almost disappeared at each monthly period.

Sometimes, chiefly in persons who sweat profusely, the disease commences with, or is accompanied or followed by, signs of inflammation. The patches are then red and often very itchy, and occasionally may become eczematous. The color also may be much darker than usual; I have once seen it dark brown; and even black **(pityriasis nigra)** is recorded by Willan, Cazenave, Tilbury Fox, Gottheil, and by C. W. Allen on the neck. These black cases were in individuals who had been in hot climates. According to Hebra, however, the pityriasis nigra of Willan is really the pigmentation which follows prolonged phthiriasis. On the other hand, Lutz, writing from Honolulu, points out that in colored races it produces white, or, where the fungus is very abundant, gray discoloration of the skin. The whiteness persists for some time after the fungus has been destroyed, and he attributes it to the layer of fungus preventing the light from exerting its usual actinic effect, and so the dark color is not developed in the material from which the pigment is formed, and this can be recognized in the rete, but without coloration.

Etiology.—Eichstedt of Greifswald, in 1846, was the first to demonstrate that the disease was due to the growth of a fungus which he called microsporon furfur. It is contagious, but only to a slight degree, requiring a congenial soil, not to be found in all persons, and prolonged contact, as in the occupants of the same bed, though husband and wife do not necessarily communicate it to each other. Köbner succeeded in inoculating both men and rabbits with the fungus. It affects both sexes, but men rather more frequently than women in my experience, but it is seldom seen in the very young or very old, occurring chiefly between twenty and forty. The extremes, in my experience, are sixteen and seventy years, but Sidney Phillips showed a case at one of the Societies of a boy, æt. seven and three-quarters, with patches on the chest and back. It is certainly more common in those who perspire freely, and this may ac-

count for its being seen so often in the phthisical, though some think that malnutrition is the favoring factor. It is certain, however, that it is by no means infrequent in perfectly robust individuals, and cleanliness is no safeguard against it, though it would be less likely to attack, and spread much less slowly in, people who wash thoroughly and frequently change their underclothes. According to some experiments of Daguet and Héricourt,* however, the fault is on the other side, and they think that the microsporon furfur fungus produces phthisis, in some instances, as they found this fungus in the diseased tissues, and the injection of the fungus rendered guinea-pigs and rabbits tubercular. These deductions are *a priori* improbable, and the experiments require confirmation before they can be accepted as correct. Two other French observers assert that it only occurs in persons who have both seborrhea and dyspepsia.

Pathology.—The color is mainly due to masses of strongly refracting conidia, which are situated almost entirely in the upper part of the horny layer, and Waelsch says they never go below that layer. According to Gudden they also penetrate into the lanugo hair follicles. The microsporon furfur is one of the most characteristic fungi of the skin. The conidia are arranged in closely crowded conical heaps, around which are the mycelia, interlaced more or less together, and connecting the neighboring heaps of conidia. The conidia are, as a rule, round, larger than those of ringworm, rather smaller than a red-blood corpuscle, and fairly uniform in size. They consist of transparent protoplasm, inclosed in a doubly contoured membrane, containing a strongly refracting yellowish nucleus. The mycelia are not very long, for the most part unbranched, and may be even or jointed, singly or doubly contoured with nuclei at regular intervals, and, when fully developed, show conidia at their termination, these latter coming off either directly from the mycelia or budding from each other (Fig. 98).

The fungus can be readily detected by washing the scrapings in ether to remove the fat and then examining them in liquor potassæ, taking care to tease out the masses, so as to get a sufficiently thin layer.

Spietschka † found that, while cultures in the same media

* Abs. of their paper in *Lancet*, May 8, 1887, "Pityriasis and Phthisis."

† *Archiv f. Derm. u. Syph.*, vol. xxxvii. (1896), with plate

were identical in twelve cases, when the medium was varied very different-looking cultures resulted. He reproduced the disease from pure cultures.

Matzenauer * also cultivated the fungus; he started on Finger's "epiderminagar," and was then able to transplant it on to the ordinary media, and grew yellow or amber colonies on agar and liquefied gelatin. The older the colony the greater the spore development. Gastou and Nicolau † confirmed Matzenauer's observations, but made their cultivations on gelose

Fig. 98.—Microsporon furfur from a woman, æt. 70. × Zeiss D.D. 10 in. tube.

moistened with placental serum, but with many failures. The only mode of development they observed was endo-sporulation.

Diagnosis.—The yellowish-brown discoloration situated chiefly on the trunk, and capable of being peeled off by scraping with the nail or a knife, and the microscopical appearances are distinctive. The diseases most like it are *seborrhœa papulosa*, or *lichen circinatus; pityriasis rosea;* and *erythrasma.* The differences from the last are given under that disease.

* *Loc. cit.*, vol. lvi. (1901), p. 163.

† *Annales*, vol. iii. (1902), p. 414.

Seborrhœa papulosa does not travel beyond the trunk, has a red, papular margin, and is more often in separate small patches than tinea versicolor. The microscope would always be decisive in a case of doubt.

Pityriasis rosea is acute in course, affects the limbs as much as the trunk, has fine, silvery scales, and only faint discoloration when it is fading and the inflammatory symptoms have subsided.

Prognosis.—The disease is always amenable to treatment.

Treatment.—The skin should be thoroughly washed with plenty of soap and warm water—soft or pumice-stone soap preferably if the skin is not very delicate—and scrubbed with a nail brush; the greasiness of the skin is thus removed, and the superficial layers roughed up, which allows the parasiticide to penetrate more thoroughly. The skin is then rubbed with a piece of flannel dipped in the following lotions: sodæ hyposulphitis ℥ss, aquæ destillat. ℥viij, immediately followed by tartaric acid ℥ij, aquæ ℥viij, by which nascent sulphur and sulphurous acid are produced in the skin.

The under-flannels must be thoroughly baked, boiled, or preferably thrown away. This treatment should be repeated once or twice a day, and never fails to cure, provided that the patient, even after the disease is apparently well, watches for some months for any reappearance, and attacks the smallest recurrence immediately. Disappointment frequently follows from the neglect of this precaution. A few spores here and there, lying perhaps deeper than the rest, escape destruction at first, and, when left unmolested, are the new starting-point for fresh patches. The above treatment is the one I invariably adopt, as it is effectual and convenient, but there are many other methods. Any of the parasiticides recommended for tinea circinata will do; preparations of thymol, chrysarobin, sulphur, fresh sulphorous acid (formulæ for which may be found at the end), are all effectual.

They all, however, require the same watchfulness against recurrence; and watery lotions must be preceded by soap-and-water ablution to remove the grease. Vigier recommends merely mechanical treatment, viz., prolonged frictions with finely powdered pumice stone fifty parts, soft soap one hundred parts; or Unna's marble soap would act in the same way;

but hyposulphite of soda or sulphurous acid lotion used after the soap would render the cure more rapid.

ERYTHRASMA.*

Definition.—A vegetable parasitic disease producing brownish patches.

This trivial affection was first described by Burchardt (1859), and then by Bärensprung (1862), and later by Besnier, Balzer, Dubreuilh, Riehl, Weyl, Köbner, Payne, etc., who all regard it as a separate affection, with which I agree. It is not very uncommon in men, but more so in women, and as it produces no inconvenience, is usually only discovered accidentally.

Symptoms.—It occurs almost exclusively in the folds of the axillæ, inguinal and genito-crural regions, the cleft of the nates, and the adjoining parts of the trunk or limbs, usually by extension, but sometimes arising there independently. Reale also observed it in the bend of the elbow, and cultivated the organism. It occurs as roundish or irregular outlined, well-defined, slightly furfuraceous patches, of variable size at first, of a uniform reddish; later on, of a yellowish, reddish, or dark brown tint, and slightly unctuous to the touch. The patches are generally few and small, but occasionally it covers a large area, as in Besnier's case, where it extended all over the thighs and upper arms, but as a rule it is confined to warm and moist situations. It spreads very slowly; if not treated, it may remain for years unaltered, producing no symptoms, or only very slight itching. Riehl's youngest case was sixteen years, his oldest fifty-eight. A case of mine was sixty-six.

Pathology.—Many writers have regarded it as a tinea ver-

* *Literature.*—Burchardt, "Ueber eine bei Chloasma vorkommende Pilzform." *Med. Zeitung*, 1859, p. 141. Bärensprung, *Ann. des Charité Krankenh*, 1862, Bd. x. Balzer, *Ann. de Derm et de Syph.*, vol. iv. (1883), p. 681, and vol. v. (1884), p. 598. The first contains a plate of the parasitic elements, the second a good general account, with bibliography. Ziemssen's "Handbook," p. 526. There is a good abstract of Riehl's paper in *Amer. Jour. of Cut. and Ven. Dis.*, vol. ii. (1883), p. 84, with woodcuts. Payne, *Path. Trans.*, vol. xxxvii. (1886), p. 516. Ducrey and Reale, "Contribuzione allo studio dell' Erythrasma." Naples, Angelis-Bellisaris (1893), and *Monatshefte f. p. Derm.*, vol. xix. (1894), p. 414.

sicolor or an eczema marginatum, but all the authorities above mentioned are agreed that it is due to a separate vegetable parasite, which Bärensprung called microsporon minutissimum. A power of five or six hundred diameters is required to see the organism well. Payne regards it as a "mucor in its mycelial stage without sporangia"; he describes it as consisting of a series of interlacing jointed threads, with segments of unequal length and variable thickness, sometimes terminating in slightly swollen, blind extremities, but without branching; they were situated between or at the borders of epithelial scales; he was doubtful whether there were any true spores. Balzer, on the other hand, describes, in addition, groups of minute spores here and there; in size, these various elements were about one-third those of tinea tonsurans. Neither Balzer nor Payne agrees that the spores, etc., found by Bizzozero in normal skin, especially between the toes, are of the same characters as microsporon minutissimum.

Ducrey and Reale consider that it is a fungus cultivated with difficulty, and consisting of minute spores and fine mycelial threads, and that its presence in erythrasma is constant and abundant, and at the same time cultures from normal skin, and pityriasis versicolor, show the same fungus, but in small quantity. Inoculation experiments with erythrasma cultures or scales have hitherto been unsuccessful; still, they think it is the real cause of the disease, but that it requires a special soil, a suitable condition of moisture, and of decomposition of secretions for its full development. They say that the parasite easily cultivated by Pasquale de Michele * was a schizomyces but do not explain his claim to have reproduced the disease in the inguino-scrotal region from cultivations. He also found the common leptothrix epidermidis in the scales, but inoculation of cultures produced no result.

Diagnosis.—The only disease for which it could fairly be mistaken is *tinea versicolor*. The absence of the disease to any extent on the trunk, the slighter disturbance of the horny layers, and the darker or redder color of the patches ought to suggest its nature, but in doubtful cases microscopic examination would be required, when the different characters of the

* *Giornale Internaz. de Scien. Med.*, November 15, 1890. Abs. *Brit. Med. Jour.*, April 18, 1891.

parasite of the two affections would be obvious; in the absence of the well-marked signs of inflammation of *tinea cruxis* one would distinguish it at once from that disease.

Treatment.—This is the same as for tinea versicolor, and the same precautions against recrudescence are required.

PINTA.*

Synonyms.—Spotted sickness; Mal de los pintos; Mal del pinto; Tiña (Mexico); Caraate, or cute, *i. e.*, look at his face (Venezuela and Granada); Quirica (Panama); Pannus carateus (Alibert).

Definition.—A tropical, contagious hyphomycetic disease, which produces discoloration of the skin.

The disease appears to be confined to the tropical regions of America between 27° north and 28° south, especially along the river banks. Possibly some of the discolorations in other parts of the world, such as the lola of Surinam, may be of a similar nature and Legrain has reported an achromia (not leukodermia) from the Sahara and a colored skin disease which occurs in groups in Tripoli which he identifies as pinta, but he could not discover the fungus. True pinta occurs extensively on the west coast of southern, and in other parts of Mexico; in Colombia, New Granada, Brazil, especially in the province of San Paolo, and sparsely in Panama, Peru, and Chili. It is said to have been imported into Mexico in 1775 from South America, where it was prevalent before the Spanish conquest of Mexico; but this can scarcely be correct, as it mentioned in the Encyclopedia of Polanko of Mexico in 1760, and was the subject of Aztec prayers for centuries. It was described by Alibert in his 1832 edition.

Symptoms.—Following Iryz of Mexico: the disease consists of scaly spots, very variable in color, shape, number, and size,

* *Literature.*—Hirsch's "Geographical Pathology," vol. ii. p. 379; a full account with bibliography to date, *Brit. Med. Jour.*, vol. ii. (1882), p. 903; abs. from paper by Dr. Iryz read before Academy of Medicine in Mexico. E. Lier, Letter from Mexico to *Monatsh. f. prakt. Derm.*, vol. xiv. (1892), p. 447, with history and some Mexican bibliography. A. Gavino, Mexico, Inter. Cong., Rome, 1894, *Trans.*, p. 33.

and appears to be allied in its characters to tinea versicolor. It usually begins on uncovered parts, such as the face and extremities, but may affect the scalp and all parts of the body except the palms and soles. It varies in extent from quite a small area to almost the whole body surface. New patches may be continually forming. While they increase in size, both by peripheral extension and by confluence with their neighbors, they are not at all, or very slightly, raised above the surface. Their shape may be roundish or irregular, sharply defined or shading off into the healthy skin, of black, grayish, blue, red, or dull white hue. The first three are superficial and spread rapidly; the red and white affect the rete mucosum and corium and spread slowly. There are thus two classes: the epidermic and subepidermic. Sometimes all these colors are present on the same individual, though at first all the spots were of one color, and only at a later stage were the new spots of different tint; or the patches may be of uniform tint throughout the whole course of the disease, and the individual patches never change color after they have come out. The patch is furfuraceous at first, chiefly in the black and blue forms, but the scales are larger in advanced cases, and the surface usually feels rough and dry, seldom moist and greasy or glutinous. In the red form ulceration sometimes occurs. The white form does not itch nor desquamate, and in many cases there is no fungus to be found. In hairy parts the hairs get thin, turn white, and ultimately fall out.* Some of the blue cases look as if tattooed with gunpowder, while the white patches have a cicatricial aspect, with a dark ring, and the skin is hard with diminished sensation. The itching is in proportion to the scaling, and may be very intense, and the patient's emanations are offensive, smelling, according to some, like foul or mildewed linen, or, as others say, like cat's urine. No other symptoms are present, except those due to scratching, though, according to some authors, severe gastric symptoms, which last from four days to a week, precede the outbreak in a few cases, the skin eruption not appearing until six weeks later: probably such symptoms have no relation to the disease.

While the disease is always chronic, lasting months or years, or even all the patient's life if untreated, it often spreads but

* Montoya y Florez says the scalp and beard are never attacked.

very slowly, or remains stationary for a long time in the red or white form, while in the black and blue variety the extension may be very rapid and general.

According to Montoya y Florez, who has studied caraate in Colombia, the red variety attacks almost exclusively white people, and is not confined to the poor. Beginning on the back of the hands and feet, it then attacks the neck and face, at first as defined red scaly patches, then festooned or maplike, and finally extends over the whole body, which becomes of a brick-red color. Ulceration sometimes occurs, and on the palms, soles, and lips, painful fissures. It runs a slow course and may last indefinitely. It flourishes in towns and in the shade. The violet black form is chiefly seen in negroes, only three per cent. of the cases being whites. It is seen chiefly in outdoor workers, attacks first parts exposed to the sun or injuries, finally extends all over the body, but only after many years. It is a more superficial and milder form than the red variety. He also describes the violet, gray, and bluish-violet forms. The white form Montoya says is the final retrogressive stage of any variety except the red. In the black and blue cases the patch is furfuraceous at first.*

Etiology.—It attacks both sexes and all ages, except infants in arms. The disease is contagious, and, as might be expected, it is most prevalent where there is dirt and neglect, and hence it is more common in the poor than in the rich, and among the dark races and half-castes than among the whites, though all are liable to it under circumstances favorable for its development. A tropical climate which includes moisture as well as warmth is evidently one essential factor, while an elevation above five thousand feet and a mean temperature below 60° F. are unfavorable conditions. Though it may commence in sound skin, a dermatitis such as eczema favors its development.

Pathology.—Gastambide has clearly shown the fungous origin of the pinta of Mexico, which Sabouraud says (without stating his reasons) is analogous, but not identical, with caraate of South America.

* Barbe has described a case from Colombia which he observed in Paris, and traced stages of erythema, deeper red, going on to bluish tint, then hyperchromia, and finally achromia. The hairs on the achromic parts became white and did not fall out.

Anatomy.—Gastambide's fungus is situated in the epidermis, and his observations favor the view that the black and blue spots are more superficial, never going beyond the horny layers, and when the disease is cured leaving no trace behind; while in the red and white the deep parts of the rete are involved, and Iryz says the corium also, and permanently white spots may mark the site of the previous eruption; and in one of Iryz's cases the whole body, including the hair, was left quite white.

The fungous elements consist of roundish and oval spores about eight μ in diameter, and tapering in branched mycelial threads, to which the conidia are attached. The results of Montoya y Florez's studies of Colombian caraate as given by Sabouraud * are as follows: The caraates are the aspergilloses of the skin, and each form has a separate species (about twenty so far). The fungi appear as long dichotomous filaments, very fine, smooth, and cylindrical, sometimes granular and in chaplets. At some points a close reticulum is formed, from which emerge two, three, and four fine mycelial threads side by side; elsewhere by dichotomy a fine filament emerges, and a short thick branch, which generally terminates in a relatively voluminous fructification, characteristic of the particular species of caraate under observation. Not only the mycelium, but the fructification can be found in the epidermis under the microscope. He traces the fungi to a saprophytic origin, as he has found a violet ash-colored form in the water of gold mines, which contain sulphate of iron and copper, and various forms in certain species of mosquitoes and bugs. It has also been found on some cereals. The analogy of these observations to those of Sabouraud on the trichophytons is obvious, as is also the inference that we are far from finality on the subject. At the same time they rendered obsolete the conclusions of Lier of Mexico, that it is merely a pigmentary non-contagious, but hereditary malady, unaffected by public hygiene, and only requiring treatment on esthetic grounds.

Diagnosis.—The diagnosis can offer no difficulty in countries where it is endemic.

The *treatment* is the same as for tinea versicolor, but, like it, the skin must be watched carefully for some time to eradicate any recrudescence from spores which have escaped destruction. Probably chrysarobin would be the most efficacious, but Montoya says that mercurials are certain cures, but it is obvious that they must not be used over a large area at once. Barbe found citrine ointment efficacious.

* *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 673.

ACTINOMYCOSIS OF THE SKIN.*

(ἀκτίς, a ray; μύκης, a fungus.)

Definition.—A parasitic affection due to the ray fungus, which excites suppurations and granulation, sarcoma-like tumors in the tissues.

Actinomycosis is a very rare affection of the skin (less than three per cent. of all cases of the disease), the deeper tissues, especially the intestine, liver, lungs, and other viscera, being most frequently affected.

In 1876 Bollinger recognized that the so-called osteosarcoma of the jaws of oxen was really due to a fungus, which Harz, from its morphology, named the "ray fungus," but as far back as 1845 Langenbeck described a fungus in connection with a case of caries of the vertebræ. In 1877 Israël described a case in man, but left it for Ponfick, in 1879, to demonstrate that the affection in man was identical with that in animals, as described by Bollinger. Majocchi was the first to describe its occurrence in the skin. He divides cases into **anthracoid** and **ulcero-fungoid.** The fungus gets into the tissues generally by the mouth, especially along carious teeth; by

* *Literature.*—Neumann's Atlas, Plate XIII., and Malcolm Morris, *Lancet*, June 6, 1896, give good colored plates of the disease on the face, and numerous references; Pringle, *Med. Chir. Trans.*, vol. lxxviii., 1895, of the skin over the ribs. Kopp's Atlas, Plate LXXV. Uncolored illustrations of the face or neck have been published by Illich (*loc. cit.*) and Darier and Gautier, *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 449. E. Ponfick, "Actinomykose des Menschen," Berlin, 1882, with colored plates. J. Israël, "Actinomykose des Menschen," Berlin, 1885. A. Illich "Klinik der Aktinomykose," Wien, 1892, with photographs and references to 569 communications. English readers, for a general account of the subject, may consult Hime's full abstract of Israël's monograph in *New Syd. Soc.*, "Microparasites in Disease" (1886), and the observations of various authors in the *Transactions* of the learned societies; or "Actinomycosis hominis," by M. Skerritt, *Amer. Jour. Med. Sciences*, vol. for 1887. Crookshank, "Text-book of Bacteriology," fourth edition. T. D. Acland, "Actinomycosis and Madura foot," Art. in Allbutt's "System of medicine," 1897. References to date. Poncet et Bérard, "Traité clinique de l'Actinomycose" (Paris, Masson et Cie., 1898). *Jour. Mal. Cutan.*, vol. xiv., April, 1902, contains abs. of several cases, and of an historical paper by Blanchard, showing that numerous cases by old authors were recorded but misunderstood.

some other portion of the digestive tract; or by the air passages. The lesions excited by its presence usually reach the skin in some part of the face and neck, rarely affecting the chest or abdominal walls from the viscera. Only in a very few instances has there been proof or reason to believe that the skin has been primarily affected from without through some abrasion of its surface, and the hand has been thus affected, but usually it is the face or neck even then, the special Indian form, mycetoma, being of course excepted. From the time of entrance of the fungus to its appearance on the surface, many weeks, months, or even years may elapse. In secondary involvement of the skin the lesions produced are remarkably like those of scrofulodermia, for which they have often doubtless been mistaken. The deep-seated actinomycetic tumor enlarges, suppurates, and as it approaches the surface the skin becomes red, livid, thinned, and undermined by suppuration, and fluctuating tumors are formed over the affected area, often with little or no pain, but pain, even severe, may be present; and then the skin at last gives way, either at one, or more often at several fistulous openings, a sanguineous serum or purulent fluid containing the characteristic yellow granules being discharged.

If some of the pus is collected in a test tube and held up to the light, they appear as brownish or greenish-brown granules embedded in muco-purulent matter. They are from a small to a large pin's head in size, sulphur yellow by reflected light, and greenish-yellow or brown by transmitted light. The microscopical appearances will be presently described.

In exceptional cases there is persistent boardlike infiltration without any softening or breaking down, or the induration may gradually subside without treatment. In Darier and Gautier's case, a woman, æt. twenty-five, nearly the whole cheek was occupied by a red nodular swelling, crusted in some places. The nodules, some of which were a third of an inch in diameter, were on a hard base, and some suppurated and broke down. The part was tender, but not otherwise very painful. As the clinical characters were not those of cancer, glanders, syphilis, or lupus, the pus was microscopically examined, and actinomyces found. Morris' case resembled the above, but was attended with great pain; both represent the anthracoid type.

Pringle's case on the back represented the ulcero-fungoid type; there were enormous fleshy sarcomatous-looking outgrowths of mottled purplish and yellow color. As he describes it: "All the growths feel pulpy and fluctuating, and are not tender. Each growth presents at least one, usually several small crateriform ulcerative openings, from which a clear, rather sticky, fluid constantly exudes. In each of these ulcerative surfaces there is an accumulation of purulent fluid of pale yellow color, which is seen to contain innumerable tiny granular specks. There are also pigmented sunken scars, the remains of previous lesions." In man, with rare exceptions, the bones escape, unless there is secondary pus cocci invasion, while in animals the bones are always involved from the first. On the other hand, suppuration is absent in animals, while it is the conspicuous feature in man, although the amount in each focus is small. The openings are usually external on the cheeks. The course of the disease is, as a rule, chronic, with exacerbations, but it is occasionally acute, and the disease spreads both continuously and by metastasis.

In the temporo-maxillary form great pain, and even trismus, may precede the tumor development, which, before the nodular development, is smooth and hard, but elastic, and the true nature of the disease would scarcely be recognized at this stage.

Though, according to Poncet, the character of the pain which comes on at night, the early trismus often preceding the pain, the wooden hardness of the growth, and the absence of glandular enlargement are characteristic, the acute cases may resemble angina Ludovici, and may be fatal in a week. Chronic cases are fatal by extension to vital parts, such as the brain, lungs, or heart chiefly, where the disease has been allowed to run its course without recognition, or before the iodid of potassium treatment was known.

Etiology.—Males more than females are affected, on account of their employment, and the majority have been young adults, but five years and sixty-five have been recorded. Although there is some evidence that the fungus is often derived from corn or hay, there is no definite proof yet of its origin. Some have had to do with cattle or horses, others have been in the habit of chewing straw or raw corn, and chewing malt appeared

to be the cause in the case of Carless, but in many, neither occupation nor other circumstances have suggested the mode of origin. In exceptional instances it may be directly communicated. Baracz of Lemberg reports the case of a cab-driver, in whom a tumor the size of a walnut formed over the left lower jaw, after the extraction of a tooth; an incision was made into the tumor, and the pus examined showed the ray fungus; shortly afterwards this man's *fiancée* came under observation with a similar but softer alveolar abscess, which also contained the fungus. Murphy of Chicago had a case in which the lower jaw of a woman was affected, and the history showed that her pet dog had died shortly before with a large swelling of the lower jaw.

Poncet and others have reported similar cases of transmission from animals. In Müller's case a woman ran a splinter into her finger, and two years later an actinomycetic tumor formed at the site of injury, and the chip of wood was found in it.

Guillemot's case was similar; a blow on the face with a piece of wood was followed in a few weeks by a tumor on the injured spot. It has also been attributed to meat and milk from infected animals, and other articles of food, such as potatoes, have been suspected.

Pathology.—It has already been explained that the disease is due to the inflammation excited in the tissues by the ray fungus; it only remains, therefore, to describe its morphology.

Anatomy.—The yellow granules above described have a center consisting of a mass of finely interwoven threads, from which others, equally fine, radiate and constitute the greater portion of the nodule. These threads, either singly, or after dividing dichotomously, swell out at their ends into club-shaped bodies, which being situated at the periphery of the mass, give it an irregular mulberry appearance. There is reason for believing that the central threads are the mycelium, and the club-shaped bodies the fructifying portion of the fungus, but the latter point is not yet definitely proved, as they are not found in artificial cultures.

Crookshank * describes the history as follows: "The spores sprout successively into excessively fine straight or sinuous, and sometimes distinctly spirilliform threads, which branch irregularly, and sometimes dichotomously. The extremities of the branches develop into club-shaped bodies, but it is difficult to say what further changes occur in them."

* *Lancet*, January 2, 1898, p. 11, with colored plate of fungus and its cultures.

He thinks the fungus belongs to the basidio-mycetes. Crookshank recommends that the granules should be examined as follows: When simply transferred to a slide, and a cover-glass applied without pressure with a one-inch objective, they appear as spheroidal masses of a pale-greenish color; on gently pressing the cover-glass, they separate into characteristic wedge-shaped fragments of a faint brown color. With less

Fig. 99.—A mass of actinomyces, showing the ray arrangement, the club-shaped bodies, and a thread of mycelium extending beyond the mass and after division expanding to form clubbed ends (after Ponfick). The appearances depicted can only be seen by focusing up and down, so as to bring the several planes successively into view.

pressure and careful focusing with $\frac{1}{8}$ inch, rosettes of clubs can be seen, while the characteristic clubs come out best when a thin layer in a drop of glycerin is examined with $\frac{1}{12}$ inch. Permanent preparations in glycerin can also be made. The best methods for staining are by Gram's method and eosin or orange rubin. This stains the central core of mycelium in the club blue, and its mucilaginous sheath pink or crimson.

The threads in the center of the granule are also differentiated into an external sheath and protoplasmic contents. While staining brings out

small interesting points, it is not necessary for diagnosis. The fungus can also be cultivated in nutrient media, of which glycerin agar is one of the best, and inoculated into bovine animals, but rabbits and dogs are comparatively insusceptible.

Diagnosis.—Slowly developing, comparatively painless, suppurating growths, in circles, groups, or moniliform lines in an adult, especially if in the skin near the jaws, with yellow points under the skin, and a tendency to open in several places like a carbuncle, should excite suspicion, and lead to the examination of the pus for the characteristic sulphur-yellow masses which are the only sure sign of the disease. The absence of lymphatic enlargement and the age would be against scrofulodermia, few cases occurring in children, and the occupation connected with horses or oxen, or with dried cereals, might furnish a significant hint. That the actinomycetes are not readily found in all cases Legrain's * case shows: the skin over the nodules was stretched and red, and small superficial abscesses formed in the neighboring skin. On puncture a hard zone was felt round them, but no fungus detected, but scrapings of an abscess inoculated under the abdominal skin of a rabbit produced a hard nodule, in which the ray fungus was found microscopically, and further demonstrated by successful cultivation in bouillon, gelatin, and agar-agar. The inoculation in a rabbit is noteworthy, as Ponfick considered them insusceptible. Other conditions besides scrofulodermia produce apparently similar lesions to actinomycosis.

Thus, in one of my cases, a farm laborer of middle age, there were closely aggregated nodular suppurating swellings all over the dorsum of one foot. Repeated microscopic and cultural examination showed only staphylococcus aureus, and persistent local disinfection of each lesion produced a cure; all the lesions were superficial. In another case I saw, a girl had an alveolar abscess which was followed by external suppuration, and it was treated before she came to the hospital by persistent poulticing. Under this the whole cheek was covered with pea-sized suppurations, but my colleague, Victor Horsley, was unable to find the actinomycoses, either before or after scraping away the unhealthy granulations.

The resemblances and differences from sarcoma need not be

* *Ann. de Derm. et de Syph.*, and abstract in *Brit. Jour. Derm.*, vol. iii (1891), p. 399.

further alluded to. Syphilitic gummatous infiltration might also be mistaken for it, and the effect of iodid of potassium would only confirm an erroneous view of specific origin of the lesion. Apart from microscopic examination an important difference is that in the early stage of suppuration the pus of actinomycosis is thin and scanty, while that from syphilis is thick and often abundant.

Its production of perityphlitis and other visceral conditions need not be gone into here. Under Mycetoma the clinical appearances are contrasted with that analogous disease.

The *prognosis* is good when there is early recognition, so that iodid of potassium can be effectually administered, or if the lesions are situated in a position where removal can be effectually accomplished, but it is ultimately fatal if left to itself.

Treatment.—The discovery that iodid of potassium is almost a specific has almost revolutionized the treatment and prognosis of actinomycosis. It was first given for the disease in cattle, Thomassen having cured eighty per cent.; Morris' is a good case in point for the human subject. The treatment was begun six weeks after the appearance of the first lesion, during which time there had been rather rapid development, extending over the angle of the mouth, over the lower jaw, nearly to the ear; fifteen (afterwards increased to thirty) grains of iodid of potassium were given three times a day, and in ten days only traces of the fungus could be found, in three weeks the growth was only half the size, and in less than three months had disappeared. The iodid was continued for three months longer, the patient remaining well. It is noteworthy that for the first three days of treatment the pain and discharge were increased, and then rapidly abated. The treatment may, however, fail if suppuration has already occurred or has spread to important parts, such as the base of the brain; some of Ransom's * cases may be referred to in this connection. It is said also that it does not destroy the fungus, but only the granulation tissue in which it is imbedded, and so, if there is an external opening, it permits the fungus to be discharged. It also very much diminishes the extent and severity of an operation if one should be ultimately required.

Locally the treatment consists in the early opening of ab-

* *Brit. Med. Jour.*, June 27, 1897, p. 1553—eight cases, one of orbit.

scesses, laying open sinuses, scraping out the diseased tissues, removing affected bone, and syringing thoroughly with antiseptics, such as iodin, one in a thousand or stronger of perchlorid of mercury, or with carbolic acid. Rydigier treated two cases successfully with parenchymatous injections of iodids—a one per cent. solution of sodium iodid appeared the best; some local reaction ensued on the first injections. Accessible disease should be attacked at once by surgical means without waiting to see what the iodids internally will do.

MYCETOMA.*

Synonyms.—Fungus foot of India; Madura foot; Podelcoma; Ulcus grave; Tubercular disease of the foot.

Definition.—An endemic disease affecting the foot or hand, attended with disintegration of the tissues, probably due to a variety of ray fungus.

The earliest notices of the disease, according to Manson, are due to Kämpfer (1712), Godfrey of Madras (1843), Balingall (1855), and Eyre (1860), but Vandyke Carter's papers and masterly monograph (1874) form the foundation, and most of the superstructure, of our present knowledge.

There are three varieties, the pale, the black, and the red, the pale being the most common, while the red is very rare. In the vast majority of cases the foot or leg is attacked, but sometimes it affects the hand, and in rare instances the shoulders, sacro-iliac joint, knee, ankle, and scrotum. The neck and abdomen are also on record.

Symptoms.—In a fully developed case the foot is much swollen and distorted, the arch being broken down and the toes forced

* *Literature.*—Vandyke Carter, "On Mycetoma; or, 'Fungus Foot of India'" (Churchill: London, 1874), with many colored plates. Tilbury Fox, 3d ed., p. 468. "Skin Diseases of Parasitic Origin" (Hardwick), p. 62. "Endemic Skin and other Diseases of India," Fox and Farquhar's Report, p. 42, Appendix I., p. 18, Appendix IX., p. 215. "The Fungus Disease of India," Lewis and Cunningham's Report, Calcutta, September, 1875. Crookshank's "Bacteriology," 4th ed., 1898. "Mycetoma as it occurs in America," Nevins Hyde and Senn, *Jour. Cut. and Gen.-Ur. Dis.*, January, 1896, gives bibliography of modern researches. Manson, "Tropical Diseases," 2d ed., 1900, gives good *résumé*.

apart and overextended, so that the sole is convex from behind forwards. All over the surface are numerous pea-sized mammillated eminences, in the center of which is the orifice of a sinus leading to a cavity situated at various depths in the foot substance, and giving exit to a thin sero-purulent discharge, containing rounded granules, like "fish-roe," of a grayish or yellowish color, or smaller black particles, or the granules may be aggregated into pea-sized masses. In rare instances the granules are pink or reddish in color. These granules also stud the surface of the eminence round the sinus.

The disease appears to be superficial at first, and may attack only a toe or finger, but the mode of commencement varies. In some cases there is at first very little swelling or alteration in color, except perhaps slight congestion; in others there may be a local induration or a papule, pustule, or nodule, either superficially or deeply seated, at some part of the foot, firmer, larger, and more diffused and less painful than a boil, which, when opened, discharges ordinary pus at first, but later on granules like poppy seeds, or the peculiar black material to be presently described, mingled with the discharge. In other cases there is a blackish or bluish mottled discoloration like tattoo puncta, before any wound of the skin appears.

Course.—The disease progresses so gradually that it takes several years for the whole foot to become disorganized, though it is generally useless for progression after a year or two, but its course and duration are very variable. Cases have been recorded lasting as long as twenty-six or even thirty years; and, on the other hand, a considerable portion of the foot is sometimes involved in the course of a year or less, but three to seven years is a common period. In some instances the tumor is very large, increasing the bulk of the foot to four or five times the normal size, while the leg wastes and increases the contrast. Sometimes the disease spreads upwards to the ankle or even knee, and it has been known to commence in the knee. As a rule it is not painful, but its bulk and shape interfere with walking.

Etiology.—The disease is endemic in certain parts of India, especially in Madura, but is not limited to any particular soil or geological formation. It has also been observed in Constantinople, Senegambia, Cochin China, Africa, Syria, and rarely in

Italy, the United States, and Canada, Guiana, and Chili. It is far more common in males than females, and may occur at all ages, though it is rare below puberty. A history of a previous attack of guinea-worm disease is present in a good many, but no etiological connection can be shown. It appears to be more common in those who work barefoot in the fields.* Not infrequently the disease is said to date from an abrasion or other slight injury, especially the pricks of thorns, and Bocarro states that the thorns of acacia Arabica have been found in the diseased tissues, but equally often the origin is quite obscure.

Pathology.—Vandyke Carter long ago found a fungus in the black variety, which was named after him Chionyphe Carteri, and to which he attributed the disease; but as none could then be found in the pale form, it remained doubtful as to whether it was the true materies morbi. In 1886 he pointed out, as Ponfick had previously done, how much mycetoma clinically resembled actinomycosis hominis. Since then, owing to improved methods of staining fungi, this conception of their relationship, if not identity, may be considered as proved, thanks to the researches of Crookshank, Kanthack,† Hewlett,‡ Boyce § and Surveyor, Vincent,‖ etc.

Clinically there are several important differences between mycetoma and actinomycosis hominis as seen in Europe; viz., actinomycosis is almost unknown in India, and mycetoma in Europe. Mycetoma is invariably a chronic local disease; the internal organs are never affected; the constitutional symptoms are always very slight; it never attacks the cervical and thoracic regions, which are the favorite seats of actinomycosis; the sulphur-colored bodies of actinomycosis have never been detected in mycetoma; nor have the black, red, and pale varieties of mycetoma been found in actinomycosis.

The general opinion now is that the pale variety contains a ray fungus, but whether identical with the European actinomycosis or not cannot be proved, as the pleomorphism of that fungus is well known; sometimes mycelium only is present, at others only clubs. Surveyor and Boyce

* Legrain found the pale variety only, in Kabylia, in Algeria.
† *Path. Trans.*, vol. xliii., 1893, and *Lancet*, July 16, 1892.
‡ *Ibid.*, July 2 and August 27.
§ *Brit. Med. Jour.*, September 22, 1894.
‖ *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1253.

have shown that the mycetoma fungus grows exceedingly slowly in a hydrogen atmosphere, while actinomyces grow rapidly; moreover, the mycetoma prefers vegetable to animal media. With regard to the black variety, the fungus most readily found appears to have the characters of an aspergillus with coarse septate mycelium, but having regard to the clinical resemblance of the black and white varieties, it has been suggested that there has been a mixed infection, the ray fungus being obscured by the aspergillus. Vincent cultivated a new fungus and called it the streptothrix maduræ. The best medium is a two per cent. infusion of hay; or potato 100, gelatin 9, glycerin 4, grape sugar 4. Kanthack says that he has found some ray fungus amongst the aspergillus form of the black variety, and that there are transition forms between the pale or perfect type and the black degenerated or structureless type. The association of the black and white granules in the same case is rare, but has been noted by Lewis,* Cunningham, and Boccaro. The disease cannot be proved to be transmissible to the lower animals by inoculation of either Vincent's streptothrix or of the mycelial fungus found in the black variety.

To see the fungus, Kanthack's plan is to soak the tissue in ether or chloroform, and wash well in caustic potash, when small round bodies are left in, with rays which appear and stain like those of actinomyces. Hewlett recommends the Ehrlich-Biondi stain.

Boyce and Surveyor used the following method for the black variety: Boil the particles for a few minutes to one hour in concentrated caustic potash, then transfer to distilled water, when a mycelial fungus could be seen. Or decolorization may be effected by washing the tissue for a minute with eau de Javelle, and then it may be stained as for actinomyces.

Anatomy.—On making a longitudinal section of a Madura foot in an advanced condition, the limb is found to be tunneled in all directions by sinuses, which may pierce the bones even, and lead to spherical cavities, either single and blind at one end, or compound and communicating with other cavities and sinuses. The whole segment of the limb is softened from fatty degeneration.

The single cavities may or may not be superficial; the compound ones are deep in the foot substance, and may be either in the bones or soft parts and ramify in every direction. The cavities and channels are lined by a fibrous membrane, and contain granules, separate or aggregated into mulberry-like masses, compared to fish-roe; these may be whitish-yellow, brown, or black, and in rare instances are red, abundant in the discharge, and not only occupy the cavities, but the sinuses, studding the surface of their walls.

The differences between the black and pale varieties appear to be in the presence or absence of this black material, and in the fungus elements in the tissues and in the discharge.

* Crookshank, "Bacteriology," 4th ed , gives a more detailed review of the whole evidence; also in *Lancet*, January 2, 1897, p. 17.

The tissues of the foot are much altered, so that there is a general confusion of parts, owing to absorption of the bones and fibrous tissues, and thickening of the soft parts. The muscles are the least altered, and in some cases the bone substance remains healthy all round the channels with which they are pierced, while, on the other hand, the bone substance of the tibia and fibula has been found softened when the limb has been amputated apparently well beyond the disease. Cunningham attributes most of these changes to a peculiar endarteritis obliterans, the fungus being, he thinks, a secondary invasion, especially as in some cases the clinical appearances are classical, but there are no fungus elements to be found.

Diagnosis.—When once the sinuses are formed and the discharge of the pale fishroe or black gunpowder-like material has ensued, there can be no difficulty in diagnosis. And the black granules under the skin before ulceration has occurred are almost equally suggestive. In the early stage, when it commences with a vesicle or pustule, the idea of the presence of the *guinea-worm* may suggest itself; but when the abscess and sinus form, the diagnosis is cleared up, except where the two parasites coexist.

Prognosis.—Spontaneous recovery is unknown. The disease is slowly progressive, until complete disorganization of the tissues is produced, and the patient is encumbered with a bulky and useless limb.

Treatment.—Only complete removal of the diseased tissue is of any avail. In the early stage, if the affected area is superficial, scraping with a sharp spoon may be successful, or the removal of a finger or toe, while the disease is limited to it, may suffice; but when advanced, amputation of the limb, well above the diseased area, is the only course. The analogy with actinomycosis suggests the administration of iodid of potassium, in intermediate cases.

BLASTOMYCOSIS.*

Definition.—Miliary abscesses in the skin, due to the presence of blastomycetic elements, leading to granulomatous ulcerative lesions with papillary outgrowth.

Gilchrist in May, 1894, and shortly after, Buschke in Busse's case, were the first to find the organisms in the pus and sec-

* There is a good article of Gilchrist's in "Reference Handbook of the

tions of the skin; but Busse, six months later, was the first who showed their significance, and that the disease was due to the invasion of the tissues by saccharo-mycetic fungi.

Buschke inoculated Busse's patient and reproduced the disease with acnelike nodules going on to crateriform ulcers.

The clinical and pathological features have been further worked out chiefly in America, where most of the cases have been observed by Gilchrist, Curtis (in France), Wells, Hessler, Brayton, Hyde and Hektoen, Hyde and Ricketts, Montgomery and Ricketts, Stelwagon,* etc. A doubtful case has been reported by Azua of Madrid. No case has been hitherto recognized in England, so I give the following description partly in the words of Gilchrist, supplementing them with Hyde and Montgomery's observations, as they have most studied the disease, no less than eleven cases having occurred in Chicago.

Symptoms.—The initial lesion is a split-pea-sized nodule, which after a time becomes pustular and breaks down into an ulcer. This extends in one or several directions, and others may form in the neighborhood. As the ulcer enlarges, in nearly all cases there is papillary growth, sometimes verrucose, sometimes fungating, in one case a cauliflower growth projected an inch. A thin mucoid discharge, often offensive, is usually present, or this may be temporarily stopped by the scabbing over of the lesion, but the scab is soon thrown off, and the thin pus discharges, or can easily be squeezed out from between the papillæ. In this pus the blastomycetes can easily be found by the addition of a little liquor potassæ as doubly contoured refracting budding bodies. In many cases pus cocci are also present, but these can be eliminated in cultures by Hektoen's

Medical Sciences," 1901, p. 412, from which I have largely quoted. There is full bibliography to 1900, inclusive, and still later in *Brit. Med. Jour.*, October 25, 1902, p. 1321, with illustrations.

*In *Amer. Jour. Cut. Dis.*, vol. xix. (1901), January No., are cases by Dyer, Montgomery, Hyde, and Ricketts, with numerous illustrations. A corrected table of cases by Hyde is in March No., p. 129, also a case by Brayton and Golden, p. 152. Stelwagon, *Amer. Jour. Med. Sci.*, February, 1901, adds another case. Also J. Méneau, "Sur la Blastomycose Cutanée," *Annalesde Derm. et de Syph*, vol. iii. (1902), p. 577. Full abs. *Brit. Jour. Derm.*, vol. xiv. (1902), p. 393. A good general review and bibliography. A. Buschke, "Die Blastomykose," "Bibliotheca medica." (Erwin Nägele, Stuttgart, 1902).

method of adding a weak solution of potassium iodid to the culture medium, which kills the staphylococci and leaves a pure culture of the fungus; but the fungus is pyogenic, as pure cultures can often be obtained from the pus without this. The diseased patch always has a well-defined raised edge, is only slightly infiltrated, for the lesion is always superficial, and in

Fig. 100.—Blastomyces. × about 800. "Drawn from a series of sections of a piece of tissue from a case of blastomycetic dermatitis ('coccidoides'), for which I am indebted to Dr. Howard Morron of San Francisco. *a*, Blastomyces, with central granular portion; *b*, budding cell; *c*, cell dividing by segmentation; *d*, budding of the fungus. This appearance was only found in one section, and rarely occurs in the tissue; *e*, giant cell formation around blastomycetes; *f*, infiltration of plasma cells and leukocytes." (From Macleod's "Pathology of the Skin."

very chronic cases there is a certain amount of healing with atrophic scarring.

The general aspect is that of a scrofulodermia with papillary growth, or of lupus verrucosus; cases like yaws (Dyer) and lupus vulgaris (Gilchrist, Stokes) have also been observed. The lesions are usually multiple, as the patient inoculates himself

from one place to another. It chiefly affects the face, hands, and neck, *i. e.*, the uncovered parts, but the thigh is also a common starting-point, and no part is exempt; it may extend indefinitely. One case (Anthony Herzog) lasted twenty years, and involved almost the whole left extremity, without affecting the general health and with very little pain, but secondary septicemia and tuberculosis have occurred. In only two cases has there been glandular enlargement, and in Coates' case it was probably from another cause.

Pathology.—The disease is due to the presence of blastomycetes * in the skin. These set up miliary abscesses in the epidermis and upper part of the corium, and in these the fungus elements † can be found, usually in budding pairs, but also singly and in groups. Secondary changes are: In the epidermis, more or less destruction of the horny layer; enormous overgrowth of the prickle-cell layer with branching downgrowths; in the corium there is infiltration with leukocytes, endothelial and plasma cells. In subacute cases there are giant cells, and in chronic ones there is a pseudo-tuberculous structure. Buschke says that all the changes are of inflammatory origin.

Diagnosis.—Hyde and Montgomery say that the diagnosis of blastomycosis and lupus verrucosus can only be made with certainty by the microscope and cultures, but in general that lupus verrucosus is slower of evolution, more often limited to small areas, has a more distinct violet halo, and is more often about the lower forearm and ankle.

It closely resembles so-called protozoic infection, which is a variant of blastomycosis.

It may have to be distinguished from lupus vulgaris, lupus

* Gilchrist, Stokes, Curtis, Hyde and Hektoen, Montgomery, and Ricketts have inoculated animals, and have produced lesions from which the fungus has been recovered and cultivated. The organism grows in all ordinary media, but especially well on potatoes and beer-wort agar.

† Hyde and Montgomery recommend methylene blue as the best stain, but the fungi can be easily seen in sections stained with hematoxylin and other common stains. They are seldom intracellular. They form round, oval, or slightly irregular bodies with a well-defined, double-contoured, homogeneous capsule, and a finely or coarsely granular protoplasm separated from the capsule by a clear space. Mature organisms have a diamater of from 7 μ to 20 μ, though smaller and larger organisms are seen occasionally. Budding forms in all stages and organisms in unequal pairs are always to be found.

papillomatosus, and other vegetating forms of disease, syphilitic or otherwise, including yaws, and from epithelioma. If the possibility of this disease be borne in mind the microscope and cultures will be decisive.

Prognosis.—In only one case hitherto, that of Busse-Buschke, has it infected any other organs than the skin, and that case was fatal. Montgomery also had a fatal case which had been diagnosed as acute miliary tuberculosis. On the skin, if allowed to go on unrecognized, great destruction and disfigurement may be produced, but it is fairly amenable to treatment. It may go on for an indefinite time.

Treatment.—Bevan has discovered that blastomycosis, like actinomycosis, is amenable to large doses of iodid of potassium, but Hyde says that, although great improvement occurs, perfect cure is seldom obtained. Méneau thinks there are two classes of cases, *a*, those due to a yeast, and *b*, those due to a mold fungus. The yeast cases run a more rapid and virulent course with abundant organisms, but are more amenable to iodid of potassium than the mold form. Small areas may be excised and large ones curetted, and Gilchrist recommends that nitrate of silver should be applied after curetting.

A closely allied fungus disease was described first by Wernicke * of Buenos Ayres in 1890, and then by Rixford and Gilchrist, and was thought by these observers at first to be a coccidial disease and called **protozoic dermatitis.** Ophüls and Moffitt, however, have shown that it is due to fungus elements very like those of blastomycosis.

Only six cases were known up to 1902, and all had been fatal, internal organs having been affected. All were men, and four had lived in adjacent valleys of California, Santa Clara, and Jonquin. Two have been in Buenos Ayres. The origin has

*Wernicke, R., Translation from *Buenos Ayres Jour.*, 1890, in *Jour. de Micrographie* (Paris, 1891), vol. xv. *Centralbl. f. Backt. u. Parasit.*, vol. xii., 1892, Trans. Other references are: Rixford and Gilchrist, Reprint from *Johns Hopkins Hospital Reports*, vol. i., 1896. A highly illustrated and valuable monograph on this and blastomycetic dermatitis. Posados, A., "Psorospormosis Infectante Generalizada, Buenos Ayres," 1897–1898. Montgomery, D. W., *Brit. Jour. Derm.*, vol. xii. (1900), p. 343, with good photograph. Full references to date. Ophüls, *Phil. Med. Jour.*, 1900. Seeber, G. R., Thesis, University of Buenos Ayres, 1900.

not yet been traced. In the skin the resemblance of the lesions to those of blastomycosis is very close.

Clinically, there are papillomatous and verrucose lesions (not in Ophüls and Moffitt's case) from which pus can be squeezed out, and *pathologically*, "there were the typical marked epithelial hypertrophy; the numerous miliary abscesses in which the organisms are present, and the tuberculous-like formations in the corium as well as the numerous plasma cells" (Gilchrist). He also says that the protozoa-like bodies developed by sporulation, the organism dividing up gradually into about one hundred spores, which were liberated by the bursting of the capsule.

Ophüls showed that when animals were inoculated with the fungus, the sporulating forms were reproduced, and from them, in a hanging drop of bouillon, mycelium was developed. In brief, it appears that the two conditions are due to the same organism, but that in blastomycosis multiplication is by budding, and the lesions are limited to the skin, while in the so-called protozoic dermatitis, multiplication proceeds by sporulation and visceral implication may follow with fatal results.

No treatment hitherto employed has appeared to have any effect on the fatal progress of the disease. Iodid of potash and mercurial inunction were both well tried in Montgomery's case without any visible result.

Sporothrix. Species of this organism are said by Schenk and Hektoen,* and by Perkins,† to have produced obstinate cutaneous abscesses in two cases, which started in the index finger and produced subcutaneous nodules and abscesses along the lymphatics of the arm.

The **Papulo-Ulcerative, Follicular, Hyphomycetic** disease described by Duhring and Hartzell ‡ may also be mentioned here. The disease had been present for three years on the side of the neck of a lad of fifteen, and resembled "a mild expression of lupus verrucosus." There was also a slight development on the forearm. The patches were rounded or crescentic, made up of discrete and confluent papules, some scaly or

* *Johns Hopkins Hosp. Bull.*, December, 1898.
† *Jour. Exper. Med.*, vol. v. (1900). No. 1.
‡ *Amer. Jour. Med. Sci.*, March, 1895.

crusted. Scarring was present in some places. Sections showed a cavity where a hair follicle had been destroyed containing mycelium and spores 1-2500 of an inch in diameter.

I record the following case, in the hope that it may lead to further investigation on the part of those practicing in China and similar climates.

A naval officer contracted the affection four years before I saw him off the China coast.

It consisted of raised brownish-yellow rings chiefly in the hairy parts of the face, but he also had a ring on the scalp over the ear and over the left scapula. I regarded it as due to a vegetable parasite, and anti-parasitic treatment kept it under, and some of the lesions had disappeared, but after two years' treatment there were still three rings. The hairs of the beard on the rings pulled out easily without root sheath, but no fungus could be discovered after repeated examination. Patrick Manson and the members of the Dermatological Society saw the case, and also thought it was due to a deep-seated vegetable parasite.

CLASS XI.

ANIMAL PARASITES OF THE SKIN.

The most important animal parasites of the human skin, either from their frequency or the character of the lesions, are, in Europe: The itch acarus; lice of the head, clothes, or pubes; bugs and fleas; and in tropical countries: The guinea-worm, the chigoe, and mosquitoes. There are, however, a large number of other parasites which attack man more rarely. These have been divided by Geber, in his valuable article in Ziemssen's "Handbook of Skin Diseases," into three classes.

I. Stationary parasites which prey almost exclusively on the human skin.

II. Temporary or occasional parasites: (*a*) sexually mature; (*b*) in their larval condition.

III. Accidental parasites which do not voluntarily attack man, but when on the skin injure it from the instinct of self-preservation.

The following list is borrowed from his articles; but, long as it is, it is not quite complete:

I. Stationary Parasites.

Sarcoptes scabiei hominis, itch mite.
Demodex (acarus) folliculorum hominis.
Pediculus: (*a*) Pediculus capitis, head louse; (*b*) Pediculus vestimenti, clothes louse.
Phthirius pubis, crab louse.
Pulex irritans, flea.

II. Temporary Parasites.

1. In sexually mature condition.

Sarcoptes scabiei communis.
Dermanyssus avium, bird mite.
Ixodidæ: (*a*) I. ricinus, reduvius, ticks; (*b*) Argas reflexus, Persicus, Americanus.
Cimex lectularius, bed bug.
Pulex s. Sarcopsylla penetrans, sand flea.
Tabanidæ, horse flies; Tabanus, Chrysops cœcutiens, Pangonia.

Culicidæ, Culex pipiens, Simula colombacencis, S. pertinax.
Hirudineæ; Hirudo medicinalis, officin., and others, Hemataria Mexicana.

2. In larval condition.

Cestoidea: Cysticercus cellulosæ.
Echinococcus, bladder worm.
Trematoidea: Distoma hepaticum, liver fluke.
Nematoidea: Filaria medinensis.
Filaria sanguinis hominis.
Oxyuris vermicularis.
Leptodera.
Muscidæ: (*a*) Musca domestica, cadavarina, vomitaria, and Lucilia Cæsar, (*b*) Sarcophila Wohlfarti (Portschinsky); Sarcophaga carnaria.

To these may be added Lucilia hominivora in America; Stomoxys calcitrans; Glossina morsitans, known in Central Africa as tsetse, etc.

Œstridæ: Hypoderma (ver macaque in Cayenne), species of Cuterebra; Dermatobia (Œstrus humanus, Humboldt); and Gastrophilus.

III. Accidental Parasites.

Species of Dermatodectes and Symbiotes (Gerlach).

Leptus autumnalis, harvest bug.
Kritoptes monunguiculosis.
Clothilia inquilis, book worm.

SCABIES.*

Synonyms.—Itch; *Fr.*, Gale; *Ger.*, Krätze.

Definition.—A contagious disease due to an animal parasite, of the suborder acarus, characterized by a special lesion due to the burrowing of the female, and by multiform lesions from scratching.

Scabies is an extremely common disease among the poor in England, and not rare in the better classes, constituting in my experience 8 per cent. in hospital, and 1.2 per cent. in private practice.

In Scotland it is still more common. McCall Anderson met with it in one-fourth of his hospital cases, and in 4.4 per cent.

* Bourguignon Delafond, "Traité pratique d'entomologie et de pathologie de la Psore ou Gale," 1862.

in private practice. On the other hand, it used to be comparatively rare in the United States, but has increased in a few years from less than 1 per cent., according to the Dermatological Association statistics, to 5.39 in 1891. White of Boston notes an enormous increase there, from nine cases in 1880 to 7.38 per cent. in 1891, while Stelwagon claims an even higher percentage for Philadelphia; in other cities the proportion is less. On the Continent it is very common.

Symptoms and Pathology.—The clinical picture of scabies is made up of two elements: the burrows, or cuniculi, and the attendant inflammation excited directly by the acarus scabiei; and indirectly, the lesions produced by scratching, and the modifying influences of pressure, friction, etc. The result is a great multiformity of lesions, which, combined with their distribution, is in itself suggestive of the nature of the disease, and enables a practiced eye to detect a well-marked case at a glance.

In order to understand the process it must be premised that the male wanders free on the surface or is entangled beneath the crusts, and, with the exception of impregnation, takes no part in the production of the disease, the female alone being responsible for all the symptomatic eruption. When placed on the skin she burrows into it with her head, the bristles on her hind legs tilting her up, so that the head is inclined to the skin and penetrates below the surface, it is said, within half an hour. Then the impregnated female lays an egg, tunnels farther, laying one or two eggs almost every day, amounting to about fifty altogether, soon after which she dies, having lived altogether about two months. The ova take from five to fourteen days to hatch out; but the way the newborn acarus reaches the surface is not certain, the most probable being that, the burrow being oblique, and the oldest end being nearest the surface, in the natural course of exfoliation of old epidermis, the most mature ovum reaches the surface first; thus the young acarus gains its freedom, and is ready to commence a new life cycle.

The female selects generally the thinnest part of the skin, such as the web between the fingers and other parts of the hand, the flexures of the wrist, axillæ, fork, and penis, and other parts of the genitals; but in long-standing cases, among the unwashed, no part is exempt except the head and face, which

are never attacked in this country, except in infants in arms. The marks of scratching are, however, much more general, and exist in all readily accessible parts. In men the pruritic eruption is mainly on the anterior surface, from the level of the nipple to the knees, and posteriorly, only on the buttocks. In women and children the arrangement of their clothes allows them to get at the lower part of the back, and the signs of scratching there are as well marked as in front.

When the skin is first penetrated by the acarus, inflammation is often set up, and a papule, vesicle, or pustule is the consequence. These papules or small vesicles, individually indistinguishable from eczema vesicles, are the most common form of eruption, but the inflammatory symptoms are absent in many burrows. The tract extends and forms a sinuous, irregular, or rarely straight line, which in very clean people is white, but, as a rule, is brownish or blackish from dirt being entangled in the slightly roughened epidermis; the length of these burrows is generally from an eighth to half an inch, but occasionally much longer, Hebra having noticed one four inches long. When a pustule is formed, part of the burrow lies in the roof, but the acarus is always well beyond the pustule or vesicle, or, if there is none, lies at the far end, and with a lens may often be discerned as a white speck in the epidermis. The degree and number of inflammatory lesions vary much; there may be no inflammation at all about many burrows, or the whole hand, especially in children, may be covered by pustules, vesicles, or papules, and indeed a pustular eruption on the hands is always strongly suggestive of scabies; there is, however, *no grouping or arrangement of any of the eruptions, as in eczema, the lesions being scattered about irregularly.* It must be remembered that burrows are not always present, from various causes. If the disease is recent, it may not have got beyond the papular or vesicular stage, while in washerwomen, bricklayers, or others whose hands are constantly soaked in water or alkaline fluids, or who have to scrub their hands violently, the burrows become destroyed. The eruptions due to scratching have already been described in the description of the "scratched skin," and comprise excoriations, erythema in parallel lines, eczema, impetiginous or so-called ecthymatous eruptions and wheals, and the inflammatory scab-topped papules often left after the sub-

sidence of the wheals, especially in children. In carmen, cobblers, tailors, and others who sit on hard boards for hours together, pustular and scabbed eruptions, situated over the ischial tuberosities, are so abundant and constant as to be practically diagnostic of scabies in such people. Similar eruptions may be seen where there is friction from trusses, belts, etc.

Variations.—In a few cases the vesicles and pustules on the hands are very like variola. In the variety known as Norwegian itch,* which is seen in its highest intensity in lepers, in whom the disease has been allowed to grow unchecked, and in people among whom washing is indulged in with the utmost caution, the lesions are not limited to any special regions, even the face becoming involved, and the number of acari is very great, owing to the protection afforded by the extensive crusting. The palms and soles are covered with thick and leathery crusts, with yellow horny outgrowths of epidermis; the nails degenerate, splitting, breaking, and shriveling from damage to the matrix. On the face, ear, and scalp the crusts are pustular, containing acari and their *débris* in great quantity, just like the mange or scabies of animals, especially that of sheep, camels, and rabbits.

In a young nodulated leper under my care, who sweated profusely for some months before his death, his limbs were thickly incrusted with an epithelial, mortarlike deposit, which was ascribed to the sweat disturbance. Scabies was never suspected, as the itching was never very great, and he had none of the usual signs; but when he died I sent some of the skin to the pathological laboratory of University College, and Boyce discovered that the epidermis and incrustations were simple riddled with acari in all stages.

Children.—In infants in arms the scabies eruption may be present over the face and scalp, from the child being held close to its infected mother; for a similar reason burrows are often found on the hips and feet of infants, infected from the mother's hand. Acute inflammation is much more easily set up in children; consequently pustular eruptions are much more common and extensive, both directly due to the irritation of the acarus, and also from impetigo contagiosa (ecthyma), resulting from scratching; urticaria is also more easily excited.

*Syd. Soc. Atlas, Plate XXVII.

Etiology.—The disease is always propagated by the deposition of an impregnated female upon the skin, but, as a rule, it is only after prolonged contact with infected people or objects, as in occupying the same bed, handling an infected person's tools,

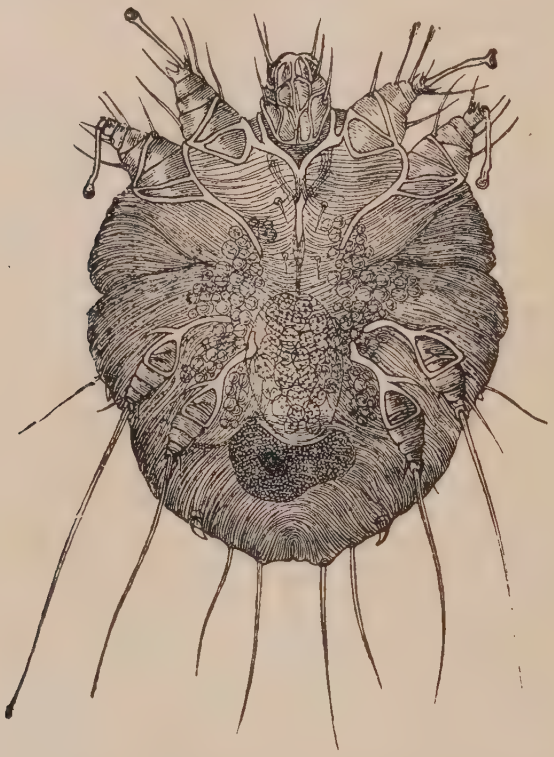


Fig. 101.—Mature pregnant female acarus. × 300 (Kaposi).
In the interior of the abdominal cavity there is a mature ovum ready to make its escape.

which are familiar examples; but I believe that it is very rare for ordinary contact, like shaking hands, to be the cause of contagion. No age, sex, or condition is exempt from it, but dirty people are more liable to it, as the acarus has a better chance of burrowing before it is disturbed.

Anatomy.—The description of the animal is sufficient here. It must be remembered that an acarus is not an insect, but having eight legs, belongs to the sub-order acari of the class Arachnidæ.

The female is just visible to the naked eye as a minute, white, shining,

roundish body, one-eightieth to one-sixtieth of an inch long (.3022 to 4322 mm.), and about two-thirds of its long diameter in width. Attached to its conical, stumpy legs are four suckers anteriorly and four setæ or bristles posteriorly, one to each limb; on the back are numerous transverse striæ and serrated lines, with a few short, nail-like setæ; while on the under surface are the legs, a few setæ, and sometimes an ovum (Fig. 101).

The male is about two-thirds the size of the female, has a small sucker on each of the inner posterior pair of legs, for the purpose of copulation, and a well-marked genital organ, consisting of a chitinous framework, in the shape of a horseshoe, which supports the penis (Fig. 102).

The larva has at first only six legs, and it is not until after its second or,

Fig. 102.—Male acarus. × 300 (Kaposi).

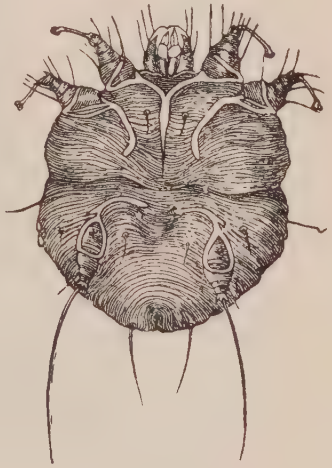


Fig. 103.—Larval acarus with only six legs and comparatively few bristles (Kaposi).

as some say, its third molt that it is fully developed and has its full complement of eight legs; it, too, burrows a short distance while it is undergoing its molts (Fig. 103). When a cuniculus is snipped out with scissors and examined, the ova are found in it in all stages of development, with fecal and other *débris*, with the most mature ovum at the oldest end of the burrow and the mother acarus at the other (Fig. 104).

Contrary to the usual statement, Török, who examined seven burrows, stated that the burrow was in the lowest part of the middle horny layer, and not in the rete. In the case of the leper before described this was correct for the great bulk of them, but here and there one acarus among

Fig. 104.—A burrow formed by an acarus within the epidermis, containing a female acarus with the head directed to the blind end of the burrow. In the acarus is an ovum. Behind the acarus, and in a row one after the other, with their long axis placed transversely to the long axis of the burrow, there are ten ova. In the three youngest of these the contents have already undergone subdivision. From the fourth to the tenth the progressive development of the young acari, in relation to the age, may be seen, beginning at the head, and, at the tenth ovum, the development is almost complete. Between the ova of the acari are black irregularly shaped fecal masses.

a score would be found in the upper part of the rete. Schiscka* states that while the burrows are always in horny layers, when the skin is thin, the acarus penetrates to the rete, and that then cornification of the rete cells round the acarus immediately occurs, and thus the burrows are always surrounded by horny cells. The inflammatory papules are the result of the penetration of the acarus into the rete and the irritation they set up in the papillary layer.

Diagnosis.—The diagnosis of scabies may be very easy or very difficult according to the development of the disease and the cleanliness, or otherwise, of the patient. In a well-marked case the characteristic feature is the presence of papules, vesicles, or pustules, chiefly on the hands, wrists, and genitals, individually looking like *eczema*, but, as a whole, scattered rather than grouped, a very important point: *e. g.*, one or two vesicles only would be present on the web of the fingers in scabies, while in eczema there would be a patch of small vesicles. In such a case close investigation would probably discover the characteristic burrow, and from this an acarus may be picked out by finding the more recent end of the burrow, from its being a little redder, and then with a needle the epidermis may be broken over the little white speck and the point inserted, when the acarus generally clings to it. A good place to hunt for the burrows is the inner border of the hand, the fingers, and the body of the penis. If the patient is a male and can be stripped, the distribution of the scratch-marks, mainly from the level of the nipple to the knees, and the ecthymatous pustules on the buttocks, of those who sit on hard seats, are equally suggestive of scabies, and in a general survey the multiform character of the eruption ought to excite suspicion.

Prognosis.—Scabies is always easily curable if sufficient precautions are taken against reinfection.

Treatment.—The treatment is simple and effectual, but requires a little care in its performance, something more than a prescription being necessary. There are two evils to be avoided: treating the patient too little and treating him too much. In all cases it is necessary to open up the burrows; to do this, the patient should be well soaked in hot water for twenty minutes, soaped thoroughly, preferably by rubbing in soft soap, if the skin is not too delicate, and then scrubbed

*Schiscka, *Archiv f. Derm.*, vol. liii. (1900), p. 3.

pretty vigorously with a hard bristle brush. The parasiticide should then be firmly rubbed in all over in a chronic case, or only in the affected parts, such as the hands and genitals, in a recent one. The patient should sleep with the applications on all night, and take an ordinary warm soap-and-water bath in the morning, putting on clean clothing. This cycle may be repeated for two or three nights in succession, but never more; and if done thoroughly, and the precautions against infection taken, success is certain, and even one such course would be effectual in most instances. The classical parasiticide for scabies is sulphur, for which there are many formulæ. Simple sulphur ointment ℥j to the ℥j is generally sufficient, and the addition of balsam of Peru makes it less unpleasant. Sherwell advocates the washed flowers of sulphur, after a bath with sand soap. The body and limbs are to be rubbed lightly with the powder—half a teaspoonful is enough. Between the sheets a little of the powder should be lightly sprinkled. This powdering is to be repeated every other night, and clean underlinen put on every other day, and in a week or ten days the cure is effected, if not *cito*, at least *tuto et jucunde*, as no secondary eczema follows.

I use in private practice, after the preliminary soaking and scrubbing, naphthol 15 parts, cret. prep. 10 parts, sap. mollis 50 parts, adipis 100 parts, as recommended by Kaposi, well rubbed in. For infants it can be used half strength, and I omit the soft soap. I can speak of it in the highest praise. It is effectual, has no smell, and is not liable to irritate the skin, as sulphur does. It is, however, too expensive for public practice. Nephritis has occurred from its overuse, but I have never seen any bad symptoms. Another remedy less likely to irritate the skin than sulphur is balsam of Peru, of which the vapor alone is said to be fatal to the acari. The balsam is rubbed in for twenty minutes every night, a nightshirt impregnated with the drug is worn, and in the morning an ordinary soap-and-water bath is taken. Hallopeau has recorded cases of ulceration of the skin produced by it.

McCall Anderson prefers styrax ointment, styracis liquidi ℥j, adipis ℥ij, or it may be prescribed with olive oil as a liniment. Carbolic oil 1 in 20 and a five per cent. creolin ointment are also used. Eudermol from 1-2 to one per cent. oint-

ment or lanolin soap has been recommended by Wolters of Bonn, but as it is a salicylate of nicotin, its use requires caution, as toxic symptoms may be produced. Peruol, a synthetic product (benzoic acid benzyl ester), is recommended by Sachs and Juliusberg as being non-toxic, odorless, not staining linen, and a certain curative agent in thirty-three per cent. strength, and does not irritate the skin. The stronger sulphur applications of Hebra and Hardy and other formulæ are given among the animal parasiticide formulæ in the Appendix.

At University College Hospital, where there is every facility, sulphur baths are used. Four ounces of sulphid of potassium are dissolved in thirty gallons of water at a temperature of 100° F. in a porcelain bath; the patient soaks in this for a quarter of an hour, and is then well scrubbed with a hard brush and allowed to soak for another quarter of an hour. While he is taking the bath his clothes are put in a disinfecting oven. Three baths are generally ordered to make sure, but one or two are quite enough, as a rule. The treatment never fails, unless the brush gets too soft to open up the burrows. When next the patient is seen, if he still complains of irritation, he has calamin lotion to soothe the skin which has been irritated by the long previous scratching or by the treatment. Sherwell's recommendation for the sheets may be used as a supplementary treatment.

Whichever of the many applications be selected it should always be borne in mind that the patient does not cease to itch immediately on the death of the acarus, and that in many persons it takes a long time before the irritated cutaneous nerves will settle down. Alkalin baths, and calamin lotion, and other soothing or antipruritic lotions should be employed, and the patient's mind reassured as to the disease being really cured. Sometimes some of the better classes become quite hypochondriacal on the subject, and it is most difficult to persuade them that the acari are not alive, "crawling about them." The stronger, especially the sulphur applications, are often responsible for the continuance of the itching, and it is important to recognize this, as of course the continuance of the parasiticide is only adding fuel to the fire. Three applications ought always to be sufficient; and if the patient chance to get reinfected from wearing infected gloves, etc., a little naphthol ointment

rubbed into the fresh lesions is all that is required. Passing a needle through each papule insures the parasiticide reaching the acarus. A troublesome complication, chiefly after sulphur treatment, is a folliculitis of the thighs, which may go on for many weeks. Painting with liq. carbonis detergens, slightly diluted, is generally effectual. In order to prevent reinfection from the clothing the underclothes should be thoroughly boiled, while cloth clothes may be well ironed, especially the trouser pockets, the iron being as hot as it can be without injuring the clothing. It is not necessary to disinfect them by superheated steam, as is done in pediculosis, though that is the simplest plan where opportunities exist. Obviously, if there are several in one household affected, they must be all simultaneously treated.

Sarcoptes Scabiei Communis. Under this head are included various other species of the sarcoptes, or acari, which form burrows, in which the female lives and deposits its ova. They affect animals, such as the horse, sheep, dog, wolf, fox, pig, and poultry (acarus depilis), and may sometimes be transferred to man.

Although almost indistinguishable in their anatomy and habits, and capable of exciting a scabies eruption of ordinary character, except that burrows are absent, they cannot live permanently in the human skin, and spontaneous recovery will ensue in six or eight weeks.

In sarcoptic itch, contracted from the horse, the face and scalp may also be attacked; an extreme instance of this is recorded by Besnier,* the whole body being also involved. The treatment would be the same as for ordinary scabies.

Another species, the sarcoptes minor, lives only a few days on the human skin, or excites a transitory local eczema.

In 1896 there was a veritable epidemic in Barfleur of a rare acarus, the glyciphagus domesticus; it did not burrow, but formed colonies round the hairs.

Pascal † observed nine cases of desquamating scarlatiniform erythema in patches, which was traced to a minute acarus, "spherogyna ventricosa," which infests the larva of a moth which eats into barley. The patients had been engaged in sifting flour infested by these moths.

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 623.

† *Ann. de Derm. et de Syph.*, vol. i. (1900), p. 947.

Layet of Bordeaux has described an acarus which irritates the skin, but does not burrow, and affects those who have to handle vanilla.

R. Menger* of Texas records a case due, it was supposed, to an undescribed acarus of the genus chorioptes. The clinical symptoms as described are so extraordinary that the interpretation of the case must be received with caution.

Rasch of Copenhagen met with a lady who suffered from intense pruritus, with strong evidence of "scratched skin," which was traced to a parasite of fowls known as menopon pallidum Nitzschii.

Dermanyssus Avium et Gallinæ. Bird mites, found on fowls and other birds, occasionally attack man during sleep, and excite eczematous or other irritation of the skin, which gets well without treatment.

DEMODEX FOLLICULORUM.

Synonyms.—Acarus folliculorum; Steatozoon, Entozoon, or Simonea folliculorum.

This parasite was first discovered by Henle in 1841 in the ceruminous glands, and shortly afterwards by G. Simon in the sebaceous glands, the latter giving the first clear description of the animal. Mégnin assigns its zoölogical position to the family Demodicides, of which it is the only genus. In the dog this or another species produces follicular mange,* attended with free suppurative folliculitis, loss of hair, emaciation, and even death, if not treated in time. In man the parasite is pretty generally distributed, being found in about one person in five easily, and with care in almost every one, but not in the newborn, and not in every sebaceous gland or comedo. It is easiest found in people with greasy skins by scraping the surface of the face with the back of a knife, and examining the scrapings in a little oil or glycerin, with a power of two or

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xv. (1897), p. 425.

† Sparks, "Disease of the Skin produced by the Acarus Folliculorum," *Med. Chir. Trans.*, vol. lvii. (1874), p. 239, with bibliographical notices and a plate. Thudichum on "Demodex Folliculorum," *Med. Press and Circular*, August 1, 1894, with plate and literature.

three hundred diameters. It may also be found by expressing several comedones and teasing them out in glycerin. There may be one or more, or even as many as a dozen, in one follicle, and they may be found in the sabaceous glands of the face, ears, and trunk. A. Kraus says they may be readily found by staining a film preparation with the Ziehl-Neelsen stain (*vide* Appendix).

Although associated with seborrhea and comedones it is not the cause of them, and, as a rule, produces no symptoms in man, but occasionally it has appeared to be the cause of skin lesions.

Remak records the case of a man who had suffered from an obstinate acne of the chin, nose, forehead, and back, and in the pustules with some difficulty found the demodex, but this is inconclusive. De Amicis met with a case of a lady, æt. twenty-seven, who had a pigmented patch of "café-au-lait" color like tinea versicolor, which gradully spread over the lips and chin. There was some prominence of the follicles. Enormous numbers of demodex were found in the scrapings, and the patch disappeared after their destruction. Dubreuilh * has met with a similar case. Majocchi also had seen two cases of pigmentation with slight desquamation, apparently due to the abundant presence of this parasite.

Allen of New York showed a woman at the Dermatological Society with lesions on the face like molluscum contagiosum, in which the demodex was found in a very active condition.

Fordyce and Holder in two cases of acne rosacea found a large number of the demodex in the sebaceous glands.

Anatomy.—This acarus is wormlike in form, varies much in length, from about $\frac{1}{6}$ to $\frac{1}{8}$ of a millimeter, or $\frac{1}{12}'''$ to $\frac{1}{6}'''$, and has three segments: cephalic, thoracic, and abdominal. The head is about $\frac{1}{5}$ of the whole body, broader posteriorly, and provided with three-jointed pedopalpi and mandibles, moving like scissors. From this part extends the esophagus, a delicate membranous tube, dilated at the end into a stomach close to the fourth pair of feet. The thorax is $\frac{1}{4}$ of the entire length, and is barrel-shaped, and to it four pairs of three-jointed rudimentary legs are attached. The abdomen is compared to the finger of a glove, being cylindrical and tapering toward the end, which is rounded. It is rather more than half the length of the body, and has an anal cleft on the under surface close up

* Dubreuilh, *Extrait du Jour. de Médecine de Bordeaux*, January 27, 1901, refers to other cases.

to the thorax. The male and female organs of generation are well differentiated, and according to Geber it is oviparous. The larva has only six legs, and, like the scabies acarus, undergoes metamorphological changes before it is sexually matured, the abdominal part becoming longer and more tapering, and the cephalic part more differentiated (Fig. 105).

Ixodes, or Wood Ticks (Nat. Ord. Acarina). Several species are temporarily parasitic on man. Ixodes ricinus is the European and temperate zone species. It bores into the skin with its proboscis, sucks the blood until it is gorged, swells to

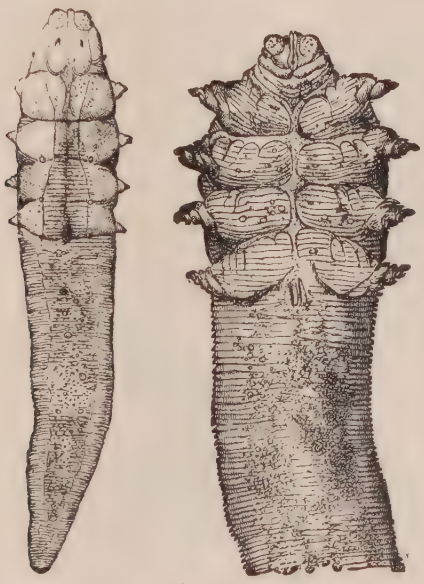


Fig. 105.—*a*, fully matured demodex folliculorum, dorsal view; *b*, under surface of anterior portion of body, very highly magnified (Nayler).

the size of a large pea, falls off until it has digested its meal, then ascends again the pine or other tree, until a fresh victim passes that way, when it drops upon him and begins again. It produces a small wheal, and, if caught in the act, should not be removed forcibly, as it will then leave its proboscis in the wound, and give great pain; it should either be allowed to finish its meal in peace, and drop off spontaneously, or an essential oil or turpentine may be painted on, which makes it withdraw its proboscis and kills it.

Desnos and Laboulbène observed on the leg of a lady a

growth the diameter of a pin's head, and three millimeters long, like a small fibroma pendulum; it increased in size for some days, then the pedicle ruptured and a female ixodes reduvius was released. If the observation is correct it is quite different to the usual occurrence, in which the tumor is the distended body of the parasite, only its head being buried, and forming what appears to be a pedicle.

LEPTUS AUTUMNALIS.

Synonyms.—Harvest bug; Mower's mite; *Fr.*, Rouget, vendangeur; *Ger.*, Erntmilbe, Grasmilbe.

This is the six-legged larva of a species of the trombididæ, "Le Trombidion soyeux," or Trombidium holosericum, according to Mégnin,* but others say it is the trombidium autumnale. It is of a brick-red color, oval in shape, from 1-3 to 1-2 mm.

Fig. 106.—Six-legged larva of the leptus autumnalis (Küchenmeister).

long, and 1-3 of a mm. broad, and has a fused cephalothorax, divided by a transverse furrow from the abdomen. The legs are long, six-pointed, and with two claws on the tarsus, and there are no discoverable sexual organs (Fig. 106). It flourishes especially in chalky districts near the sea.

Symptoms.—The animal bores its head only into the skin, producing bright red papules and wheals, which itch violently,

*"Les Acariens parasites." by P. Mégnin. "Encyclopéd. des Aide Mémoire." He gives there a figure of the adult eight-legged acarus as well as of the larva and ovum.

and become proportionately scratched, with the usual consequences. In one of my cases a general attack of impetigo contagiosa resulted. It usually attacks the ankles and legs first, but may spread to other parts of the body. It is seen chiefly in July and August, in people who have been in the fields, or among gooseberry and currant bushes, etc., and in severe cases may be attended by slight febrile symptoms. Duhring, on the authority of Professor Riley of St. Louis, describes two other species, with similar habits, as occurring in the Southwestern States of America, viz., the leptus Americanus, American harvest mite, and the leptus irritans, or irritating harvest mite. Geber, in Ziemssen, describes another larva which is common in barley, and affects the reapers and loaders; it is an eight-legged, yellowish-white animal, with an oval boring apparatus, but without sexual organs. It produces urticarial lesions round the mouth of the follicles, and the animals may be found in their neighborhood beneath the epidermis. In severe cases the urticaria goes on to more or less severe eczematous dermatitis. The treatment is by mild parasiticides, such as are used in scabies, naphthol or weak sulphur, or white precipitate ointment. The soaking and scrubbing, necessary for scabies, are superfluous here.

PEDICULOSIS.

Deriv.—φθείρ, the louse.

Synonym.—Phthiriasis.

These terms now signify the symptoms produced directly or indirectly by the three kinds of lice to be presently described. Formerly, however, even up to the beginning of the last century, the name phthiriasis was given to an imaginary disease, in which the pediculi bred in the flesh of the victim, in enormous numbers, and consumed him to the very bone.

No one, except Landois, now believes that such a disease ever existed. Indeed, the life-history of the pediculus absolutely negatives the possibility of a subcutaneous existence.

This much, however, may be admitted—that certain people are much more attractive as hosts than others, and that some

cachectic states offer favorable conditions for the rapid development of pediculi. In the post-mortem room, even some corpses develop pediculi capitis very much more abundantly than others, and that, too, where there was no reason to believe that they existed during life. Of course, in all cases, the pediculi come from without. While either of these terms logically refers to lice in general, when used without qualification, custom restricts the meaning to pediculi corporis.

I. Pediculus Capitis. This parasite is extremely common among the children of the poor, but, unlike scabies, is rare in the cleanly.

Symptoms.—The insect on the scalp excites no special lesion directly, but produces such intolerable itching that the patient is obliged to scratch vigorously, not only where the pediculus is at work, but all over the scalp.

In healthy, well-nourished people, the pediculi, if in moderate numbers, may lead to nothing beyond this. They keep where the hair is thickest, viz., the occipital region; here excoriations from the nails soon appear, and before long, especially in the poorly nourished, impetigo contagiosa is produced. At first, discrete pustules, covered with green-black crusts, are formed, or, if allowed to go on, several of these coalesce into one or more large patches, but nearly always with some discrete scabbed spots beyond the main patch. Many authors describe this eruption as a pustular eczema, but the pus is always inoculable, and the characteristic lesions of impetigo contagiosa are often present on the body also. This eruption is so constant that a *pustular eruption limited to the occipital regions is almost diagnostic of pediculi capitis.* Where no means are adopted to kill them and where the hair generally is neglected, the pediculi extend more forward, and the nits and impetigo lesions may be found all over the scalp.

These pediculi are nearly always confined strictly to the scalp, but have in rare instances been found on the body in elderly, bed-ridden subjects (Duhring), and Lydston * records a case of a girl of fifteen in whom they swarmed on the pubic hair, but were not on the scalp; also where the hair is allowed to hang down, similar lesions may be seen on the neck, mixed

* *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. x. (1892), p. 399.

with excoriations from scratching, but the impetigo pustules are smaller, as a rule. In cases of extreme neglect the hair gets matted together from the glutinous pus, and this, with the pediculi and other *débris*, scales, scabs, dirt, and fungi deposited from the atmosphere, make up the condition known as **plica polonica.**

The occipital glands, and, in severe cases, the other neighboring glands, undergo sympathetic enlargement, are tender, in-

Fig. 107.—Ova of pediculi capitis.

a, natural size of hair with twenty-nine ova upon it; *b*, *b*, ova, magnified, showing the cement attaching the ovum to the hair shaft and the operculum attached, *c*, empty ovum, operculum fallen off.

flamed, and may even suppurate. The mothers always state that the lumps came first, then the sores, and then the lice, this reversal of the actual order acquitting them, as they think, of neglect.

Where the pediculi are only present in moderate numbers the nits are more easily seen than the pediculi. They form small white specks, very like a small scale, but on pulling out the hair the nit is seen to be situated laterally on the hair shaft, while a scale is generally pierced by the hair. Moreover, on passing

the fingers gently along the hair, the scale comes off, while the nit is glued firmly on. Commonly there is not more than one nit on a single hair, but where the pediculi are swarming they economize space and I have counted twenty-nine strung at short intervals on one hair.

When the pediculi are sparse the impetigo contagiosa is often the only disease complained of, but scattered scabbed lesions, for the most part limited to the occipital region, should at once lead to careful examination, when the lice or their ova will certainly be discovered.

Etiology.—Pediculi capitis occur at all ages, but are most common in children. They are always conveyed from one person to another, either by direct contact, as in persons sleeping together, or by using the same hat, brush, comb, etc.

Naturally pediculi are more frequent and flourish most in those who neither wash nor brush their hair very frequently.

Anatomy.—The head louse is about two mm. long and one mm. broad. The female is much larger than the male, and exists in much greater numbers. The young hatch out after six days' incubation, and are fully developed in twelve or fourteen days more; and as each female lays from fifty to sixty eggs, they multiply with great rapidity.

The head louse is smäller than the body or clothes louse; its head is acutely triangular, while that of the pediculus corporis is nearly oval; it has a broader thorax, and the margins of the abdomen are darker. The legs are shorter, and it is less active.

In a male the last abdominal segment is rounded off and prominent. There is a valvular opening on the back, the common anal and genital opening. The penis, therefore, which is simple and wedge-shaped, protrudes on the dorsal surface.

The female has the last abdominal segment deeply notched at the apex, in which the anus is placed. The vaginal aperture is on the ventral surface. It is clear, therefore, that the female is uppermost in copulation.

The color of the pediculus varies according to the color of its host. On Europeans it is gray with blackish margins, on the Esquimaux white, on negroes black, on the Chinese yellowish-brown.

Treatment.—If the patient is a child, and it is not necessary to preserve the hair, this should be cut off close, the crusts softened with oil and picked off, or the hair cut underneath them, and ung. hyd. ammon. freely smeared on; this kills the pediculi, disinfects the pus, the sores readily heal, and the nits are got rid of with the hair.

Where it is necessary, as in women, to preserve the hair, the

pediculi may be killed by rubbing in ung. hyd. ammon., and the vitality of the nits destroyed by sponging small portions of hair at a time with the one in forty solution of carbolic acid; frequent combing will gradually detach the dried-up ova, or the cement will give way by sponging in the same way with a lotion of acidi acetici ℥ij, hyd. perchlor. gr. 3, aquam ad ℥viij. Where the disagreeable smell is not a bar to its use, soaking the whole head freely with petroleum, such as is used for lamps, is immediately destructive to the lice, loosens the nits, and the impetigo contagiosa can then be treated with the ung. hyd. ammon. dil.

It is said that lice are quickly destroyed by infusion of quassia,

Fig. 108.—Male pediculus capitis, showing its system of tracheæ and its respiratory stigmata (Küchenmeister).

to which a little glycerin of borax has been added. It has the advantage of being cleanly and free from smell, but it would not detach the nits.

II. Pediculus Corporis. *Synonyms.*—Pediculus vestimenti; phthiriasis.

Symptoms.—This parasite is a denizen of the clothes, in which it carries on all its life processes,* except feeding. Like most parasites it thrives most where the nutrition of its host is at a low ebb. It is, therefore, almost restricted to the aged and the dirty, the half-starved and cachectic, and it is only seen in the young when they are very neglected, or in very close contact with older victims.

The lesions produced by its presence are mostly secondary and due to violent scratching, which the operations of the insect

* Jamieson's observation that the ova may sometimes be found on the lanugo hairs does not invalidate the general truth of this statement.

induce. The only direct lesion is a minute hemorrhagic speck, only just perceptible to the eye, and not at all to the touch.

Its production, according to Tilbury Fox, depends upon the mode of feeding. Schjödte describes this pediculus as follows: "It possesses no mandibles or other means of biting, but only a kind of sucking apparatus, consisting of a membranous tube, which can be protruded at pleasure. When the pediculus is about to feed it inserts its labium into a sweat pore, and protrudes the lip. This lip is surrounded by a collar of hooks, which, though straight when at rest, become curved outwards when the lip is protruded, and thus afford a hold on the skin. The tube is now inserted, and the blood sucked up; and when the meal is concluded the blood wells up into the orifice, and forms at first a pin's-point-sized, bright red speck, in a minute depression in the center of a small, transitory wheal, and when the wheal, which itches violently, subsides, the speck of dry blood alone is left." I am, however, inclined to think it is only the excrement of the animal; but, however that may be, this "hemorrhagic speck" is as distinctive as the burrow of the acarus is for scabies; but, inasmuch as it requires very careful looking for, the secondary lesions attract most attention. One of these may be easily mistaken for the characteristic speck. It is a small blood crust produced by the decapitation by the nails, of a slightly hyperemic follicle. It is, however, not only larger than the "speck," but the nail, when passed over it, catches, while the hemorrhagic speck is imperceptible. The secondary lesions are all those described under the "scratched skin" (p. 42); excoriations, wheals in parallel lines and spots, ecthymatous sores, and ultimately dirty brownish, in rare instances almost black pigmentation, with thickened, leathery skin. In themselves there is nothing distinctive, their diagnostic importance depending upon their localization.

The favorite habitat of the pediculi is just underneath the neckband of the underclothing. Here they first establish themselves, and are always most abundant, and it is at the nucha and shoulders, therefore, that their ravages are greatest, and the scratching most vehement. So much is this the case that extensive scratchmarks on the nucha and shoulders, in an elderly person, are practically diagnostic of pediculi corporis; when to these are added the hemorrhagic specks, the discovery

of the pediculi themselves or their ova on the clothes is fortunately of secondary importance, for too often, if the patient is lucky enough to possess a change of linen, he pays the doctor the compliment of putting it on just before his visit, and of course no pediculi are then to be found. Only in extreme cases, or at their mealtimes, are they to be found on the body itself; and where they are so abundant, especially if in a young person, a pyrexia of several degrees, even as high as 106.4°, has been observed. This Jamieson thought was reflex from the cutaneous irritation; but Payne, with more probability, thinks it may be due to some poison inserted by the insect analogous to that of the mosquito, bug, etc. In cases of some duration in dirty people the scratch-marks are to be seen all over the trunk, except between the shoulders, which are not easily reached; on the front and inside the thighs, but not much below the knees; on the arms, but not much below the elbows, while the hands and wrists are always free. The thickened, leathery, and much-pigmented skin is always a sign of chronicity, and being common in tramps, is sometimes called "vagabond's disease." Hebra regards this as the pityriasis nigra of Willan, and gives a plate of it in his atlas,* where the whole skin was of a deep bronze hue.

This melanodermia is sometimes out of proportion to the actual scratching, especially in chronic alcoholic and other cachexias, and is not confined to the infested regions. Thibierge has found it on the buccal mucous membrane, and suggests that the lesions of scratching are transformed into pigment which gets into the circulation. Boudon's suggestion that it is the direct product of the parasite inoculating an irritant saliva lacks proof and probability.

The subjective symptoms are itching, burning, and formication, very intense, and always worse at night, not confined to the regions of the insect's operations, but reflexly felt anywhere and everywhere.

Etiology.—As already stated, phthiriasis affects the old rather than the young, the badly nourished and cachectic rather than the healthy and well-fed, the poor rather than the rich, dirt,

* Lief v., Plate XI., and Kaposi's Hand Atlas, Plate CCXXI. Alibert in his quarto edition of 1832, p. 526, gives a plate in which the skin was quite black where the pediculi were most numerous. *Vide* note, p. 664.

neglect of ablutions, and alcoholism being the other chief favoring conditions.

However suitable the subject the disease is only acquired by the transference of the pediculi or their ova from another individual, spontaneous breeding being only a popular fiction. On the other hand, in young and vigorous subjects, even if exposed to infection, the lice will often fail to flourish, and even after infection in a young but half-starved patient, with cleanliness and good feeding alone, they will often die off. Clearly, therefore, unlike the acarus scabiei, the pediculus corporis has its preferences, probably some odor in the favored person commending itself to the parasite. Indeed, I know of an instance in which four young medical men placed a pediculus in the

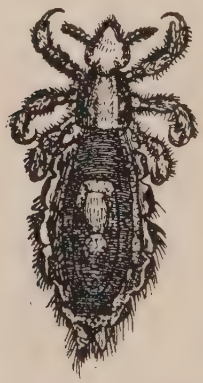


Fig. 109.—Female pediculus vestimenti (Küchenmeister).

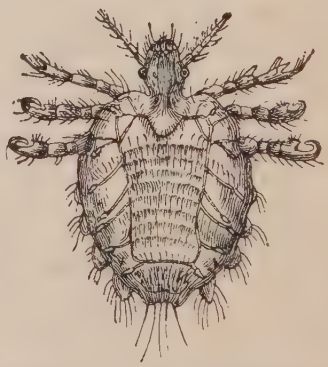


Fig. 110.—The pediculus pubis, or crab louse (Schmarda).

middle of a small table, round which they stood, and the pediculus invariably went towards the same man, though they repeatedly changed their positions.

Kaposi, however, is of opinion that it is only because the well-nourished and the better classes are seldom exposed that they are seldom attacked; but this cannot be the whole truth, as pediculi corporis are seldom seen, even in dirty children. According to Cobbold, the pediculus of the cachectic is a separate species—P. tabescentium, or distemper louse.

Anatomy.—The body louse is larger than the head louse, which it otherwise closely resembles. The length is two to three mm. (three-quarters to two lines), and it is half that in breadth. The head is more

oval and elongated than that of the head louse; the antennæ are longer, the thorax distinctly segmented, the legs more developed, with larger claws, and it is, therefore, more active. The color is dirty white, with black margins. In other respects it is like the head louse, the larger size being the most conspicuous difference (Fig. 109).

Diagnosis.—The diagnosis lies in the conspicuous evidence of scratching on the shoulders and nucha, especially in an elderly person, in its absence from the hands and wrists, and in the presence of the characteristic "hemorrhagic specks." Search in the folds of the clothing, especially about the neck, will result in the discovery of the pediculi and their ova, unless the linen has been very recently changed. In the younger patients, ova may sometimes be found on the lanugo hairs. However clean the patient, search for the parasite should always be made if pruritus is severe without other obvious cause.

Treatment.—The disease is always readily curable, if it be borne in mind that the pediculi live in the clothes, and to them, therefore, the principal treatment should be directed. Where facilities exist the clothes should be placed for some hours in a disinfecting oven, of at least 212° F. Failing the opportunity of this, repeated boiling will be effectual for the linen. For the patient free ablutions with soap and water and alkaline baths to soothe the irritable skin should be employed. The ung. staphisagriæ, or petroleum lamp oil, freely rubbed in, kills any chance pediculi or ova that may be on the skin, or on any part of the clothing in contact with the skin. Care must be taken against reinfection from the bedding, etc., which should be treated like the body clothes. In marasmic subjects, suitable measures in the way of feeding, cod-liver oil, and the removal, if possible, of the cause of emaciation, are valuable adjuncts.

Jamieson recommends that a small lump of roll sulphur should be wrapped up in a porous bag and worn constantly next the skin; sulphurous acid is imperceptibly given off.

III. Pediculus pubis. *Synonyms.*—Phthirius pubis; Crab louse; *Fr.*, Morpion.

Symptoms.—This species resembles the pediculus capitis in its habits, but is much less common. The chief haunt of these insects is the pubic hair, from which they may spread up to the

hair on the raphe of the abdomen, to the shaggy hair of the thorax, and thence to the axillæ and limbs. In very filthy people and in children, it may also be seen on the eyebrows * and lashes, when the minute nits on the hair and the "hemorrhagic specks" on the adjoining skin are the most obvious feature. At the same time they lie so flat on the eyelids that only careful examination with a lens will reveal their presence. The whiskers and beard may also be sometimes attacked, and it has very rarely been found on the head. In a case by J. Heisler from Roná's "Poliklinik," a child of fourteen months, who had slept with a servant-maid, had them not only on the lids and lashes, but all over the scalp, nits also being abundant there. Trouessart met with a case, æt. five months, contracted under precisely similar circumstances.

Grindon † met with a group of cases, five children and the father and mother; the parasite was confined to the margin of the hairy scalp, not encroaching on the scalp for more than an inch. They were also on the youngest child all over the body, clinging to the lanugo hairs. White of Boston and Jamieson also mention cases.

Being much more stationary, of small size, of yellowish-brown color, and lying flat on the skin, it is easily overlooked. Clinging usually to a couple of hairs, it digs deeply into the orifice of a hair follicle, and usually excites great and persistent irritation, though in some cases the irritation is very trifling. Scratched-topped papules seated at the follicles are the most commonly excited lesions, but if the pediculi are left to flourish more severe eczematous inflammation is excited, and may spread beyond the site of its irritation. Pyrexia has been observed in connection with this species also (Payne).

Besides the pediculi and their minute gray-colored nits, which are attached to the hair close to the skin, Morrison, in 1868, showed that finger-nail-sized, steel-gray spots of pigmentation (maculæ cæruleæ, taches ombrées) are sometimes observed deep in the epidermis of the affected areas; and Duguet, in

* Cobbold considers that the lice that affect this position are a distinct species, which he calls the P. palpebrarum.

† "The Migrations of Pediculi," *The Medical Fortnightly*, St. Louis, Chicago, March 15, 1893, with numerous references to cases of pediculi in unusual positions.

1880, 1882, showed that this pigment was contained in the thorax of the animal opposite the anterior pair of legs, where there are known to be two pairs of salivary glands, and it is probable that the secretion is conveyed into the tissues through the haustellum. The blue spots are more marked in persons with clear, white, transparent skins, and in the months of February, March, and April. The blue spots are, therefore, mere stains of the epidermis, and disappear in a few days after the destruction of the pediculi. Jamieson thinks that the stains have some anesthetic effect, as far as itching is concerned, though not for the other sensory phenomena. Oppenheim * has observed a green coloring matter in pediculi pubis, especially in impregnated females, while it was absent in the young lice.

Etiology.—This variety is more commonly seen among the well-to-do than the other kinds, being most frequently communicated during impure intercourse. Of course it may be also derived from the bedding, clothes, etc.

Anatomy.—The pediculus pubis (Fig. 110) is much broader and flatter in proportion than the other pediculi. The female is about one and a half to two mm. long and three-quarters of that broad. The male is about half the size of the female, and the terminal segment of the abdomen is rounded, while in the female it is notched. The head is rounded, provided with five pointed antennæ and two small, prominent eyes behind them. It has a neck, by which it is attached to the sulcus of the heart-shaped body, the broad, flat thorax being merged into the abdomen, and carrying anteriorly a slender pair of legs, which are used for walking, and terminate in a straight claw; while the two posterior pairs of legs are stronger, and used for clinging and climbing, and are accordingly provided with strongly curved claws, and, with the tarsus, make three-quarters of a circle. The ova are ten or fifteen in number, hatch out in a week, and the young are sexually mature in two weeks.

Diagnosis.—The diagnosis can present no difficulty if the possibility of their existence be borne in mind in every case of pruritus of the pubes and other regions liable to their attack. At the same time they require a close investigation, as they are very small objects, being almost immobile and lying close to the surface, they do not look like live animals. A common source of error is that the secondary eczema occupies all the attention until the fact of the irritation being out of proportion to the degree of eczema induces closer investigation.

**Archiv f. Derm. u. Syph.*, vol. lvii. p. 235.

Treatment.—Naphthol ointment, as recommended in scabies, should be rubbed in, or hyd. oleat. five per cent. ʒvj, ether sulph. ʒij is a good application, and kills the nits; or Peruvian balsam and vaselin or lard, in equal parts; or they may be subjected to the vapor of chloroform; or the part may be freely dabbed with a lotion of hyd. perchlor. 1 in 250, and the nits destroyed with carbolic lotion 1 in 40. The classical treatment of two good rubbings of the ung. hydrargyri is effectual, but not free from the danger of exciting a dermatitis of its own. Calamin lotion should be applied freely after the animals and their ova are killed, in order to allay the irritation, which does not subside at once; and the patient's mind should be tranquilized by explaining this, or he is apt to fancy himself uncured, and resort to violent and quack remedies. The various lotions for nits already described for pediculi capitis find a place here also. It is better not to cut the hair on the pubes, as the pressure of the clothes on the ends of the growing hair produces intolerable irritation, until the hair has grown long enough to curl.

Pediculi ciliorum are best treated by picking off the living lice with forceps, rubbing on diluted nitrate of mercury ointments, and sponging the eyelashes with carbolic lotion 1 in 40 to kill the nits.

PULEX PENETRANS.

Synonyms.—Rhynchoprion penetrans; Nigua; Chigoe; Jigger; and many other local names.

This parasite is indigenous to tropical America, between 23° N. and 28° S., and in 1872 was imported into Africa, and spread widely over the Gaboon and Congo coast. It has also been met with in Madagascar and China. It only survives for a short time (a few months) when imported into temperate climates. Dry sandy soil, the dirty huts of negroes and Indians, piggeries, cattle-sheds, and poultry-pens are its chief quarters. The animal is like a common flea, but smaller, with a proboscis as long as its body, and has a deeper abdomen.

The impregnated female alone bores obliquely into the skin, most commonly under or beside the toe-nails, between the toes, or the less common positions are, parts of the foot other than

the toes, the arms, scrotum, knee, upper extremity, and face, burying herself all but the two last segments, which plug the orifice of entrace and do not partake of the enlargement of pregnancy. She remains until the maturation and extrusion of the eggs, which distend the abdomen into a sac as large as a small pea.

A thirteen-ringed larva hatches out a few days after the ova are deposited on the ground, and some days later incloses itself in a cocoon, from which it emerges in eight to ten days as the perfect imago, taking probably about the same time for her life-history as the common flea, viz., rather less than a month.

Her subcutaneous sojourn excites painful inflammation, swelling into a pea-sized tumor, suppuration, and ulceration, tending to expulsion of the parasite, but not until she has fulfilled her destiny and has discharged her ova. The resulting ulcer may from secondary microbic infection be the seat of extensive ulceration or gangrene, and even tetanus may supervene. There is usually only one or two chigoes in a foot, but there may be hundreds producing a honeycomb of cicatricial pits (Manson); Declé speaks of 280 from one person.

The treatment consists in picking out the chigoe with a blunt needle, taking care not to rupture the abdomen; anointing the foot with essential oils, chloroform, turpentine, or carbolized oil, which kills the insect and prevents further attacks. Abscess cavities should be washed out with disinfecting solutions—corrosive sublimate one in two thousand, or carbolic acid one in forty.

Cleanliness, washing the floors with carbolic acid, and always wearing shoes are the best prophylactics.

Pulex Irritans. The common flea is only too well known. It produces a red spot, seldom so wheal-like or large as that of the bug, with a central puncture, which, when recent, will distinguish it from erythematous eruptions due to internal causes, but in a short time, especially in cachectic subjects, it becomes petechial, and, if associated with fever from some other cause, may give some trouble in diagnosis from typhus, measles, etc. The general dirtiness of the patient, and the more recent bites, will give a clew to the cause.

The human flea may be transferred to the dog, and that of the dog to a man, but it does not live long upon him. Berg records a case of a filthy old woman with psoriasis, in which the larvæ of the common flea were flourishing among the scales and crusts of her disease. A rise of temperature has been known to occur from extensive flea-bites.

Cimex Lectularius, Acanthia lectularia, or common bed bug. This animal, with its repulsive smell, is too well known to need description. It comes only on the human body to feed, puncturing the skin, injecting an irritating fluid to increase the hyperemia, and sucking its victim's blood. It produces a wheal, a raised red spot, with a whitish center and a central puncture, and on the subsidence of the swelling there remains a purpuric spot, which follows the usual course of petechiæ. A formidable species, the Conorhinus sanguisugus, or "big bed bug," excites severe inflammation, and is said by Riley of St. Louis to be found in beds in Illinois and Ohio.

Treatment.—Toilet vinegar, carbolic acid lotions, weak liquor ammoniæ, corrosive sublimate one in five hundred, or Goulard water sponged on freely, or the lotions recommended for urticaria, give most relief.

Culex Pipiens and other Gnats and Mosquitoes of various species, all over the world, attack man and produce a wheal, and in hot climates they are a real pest, and great precautions have to be taken to prevent their access at night. Species of tabanidæ and simulium also excite wheals in different localities. Weak liquor ammoniæ or sal-volatile, and the other remedies mentioned under bug-bites, give relief to the intolerable itching. Rubbing the part with soap, and allowing a stream of cold water to run on it, is said to give immediate relief. Carbolic oil rubbed on is another good remedy. The tsetse fly, so fatal to beasts of burden in Central Africa, produces wheals only in man. Sponging the surface with infusion of quassia is a good prophylactic against mosquito-bites and the importance of prevention is very great now that they are known to be the carriers and circulators of so many diseases, such as yellow fever, malaria, filaria, etc.

Œstrus, Gadbreeze, or Bot-fly.* The term "*myiasis*," or dermato-myiasis has been proposed for the attacks of dipterous larvæ on the human subject, but the cases are too rare to require a special name. Cases of the presence of dipterous larvæ of several species of œstridæ in the skin have been reported from time to time by various writers in Europe, of whom Walter Smith, McCalman, Walker of Shetland, and Dubreuilh may be specially mentioned. In Shetland it is said to be common, and always in women. It is often met with in Africa, especially in Senegal, and in Central and South America, where it is known as "ver macaque." They are all for the most part parasites of herbivorous animals, dogs, etc., and are only occasional visitants to man. Humboldt's œstrus hominis is now known to have no existence.

The ova or larvæ are deposited under the skin by means of the stinging apparatus, and set up either furuncular inflammation with a central aperture, through which the larvæ may be pressed, together with a sanious fluid, or they burrow under the skin, forming irregular serpiginous lines of wheals, which Walker compares to that produced by an inflamed lymphatic, but it is of a purplish color; at the end of this line suppuration occurs before the larva escapes. Carbolic acid (1 in 40) should be injected into the cavity after evacuating the larva.

The gastrophilus larva is separately described below. Other dipterous larvæ invade the skin only where there is a previous breach of surface, such as the sarcophila Wohlfarti (Europe), the lucilia hominivorax, and macellaria (America and Asia); they produce severe ravages in a short time, inducing gangrene

* *Literature.*—Smith reports an interesting case of dipterous larvæ in the skin in *Report of Inter. Med. Cong.*, London, 1881, with partial bibliography and the substance of McCalman's case. Matas, in reporting a case from Honduras in which red furuncular swellings were produced, says there are three species which attack man—the hypoderma bovis, a species of trypoderma or cuterebra, and dermatobia noxialis; his case was due to the last species. W. Dubreuilh, "Les Diptères Cuticoles chez l'Homme, *Archives de Médecine Expérimentale*, No. 2, March, 1894, a comprehensive account with valuable references. Abraham gives a good historical and bibliographical account of the subject, *Trans. Derm. Soc. G. B. and I.*, vol. iii. (1897), p. 62. His criticism of my name, "larva migrans," is beside the mark, as it is obvious that it was proposed for the larva, and not for the disease.

of the skin, destroying fat muscles and vessels, and endanger life.

Larva Migrans of Gastrophilus.* This lesion, produced by the above-named larva, was first described by Robert Lee, as a "creeping eruption" from two cases (1875 and 1884), then by myself (1892), and Neumann and Rille of Vienna, 1896. It appears, however, to be fairly common in Southeast Russia, near the Volga, where it is popularly called Wolossatik (Woloss, hair), two Russian observers, Sokoloff and Samson-Himmelstjerna, seeing two or three cases a year in that district. A case has also been observed in Bulgaria.

I am informed that in children in Arabia it is very common, and that mothers burn the part with a hot wire.

The two Russian observers have found the larvæ, which others have failed to do.

They identify it as the larva of a dipterous insect, order œstridæ of the genus gastrophilus, species undetermined; but if Sokoloff's observation that he found black empty nits on the hair in the neighborhood of the track is correct, it would suggest one of two species, hemorrhoidalis or pecorum, as only these two have black nits. The larva is spindle-shaped, segmented, and from one to one and a half millimeters long.

How the larva gets into the skin is unknown; the mother of my case said that the child was found with half a slug in her hand, as if it had been bitten off. Several cases have commenced in the buttock and have been attributed to the closet seat, but the more probable explanation is that the insect took advantage of the exposure of the buttocks to deposit its ova in the skin of that part. The lesion produced is a narrow red line a sixth to an eighth of an inch broad, only just perceptibly raised. This line travels over the surface at the rate of an inch or more a day, an inch being the usual distance, performing all kinds

* *Literature.*—Author's Atlas, Plate XCIII., Figs. 2 and 3, with full account of the case which was sent to me by Dr. Travers Smith. *Clin. Soc. Trans.*, vol. viii. (1875), p. 44, with report; and vol. xvii. p. 75. Neumann, *Archiv f. Derm. u. Syph.*, vol. xxxiv., Heft 1 (1896), p. 905; abs. *Brit. Jour. Derm.*, vol. viii. p. 145, of Russian papers. Samson-Himmelstjerna, "Ein Hautmaulwurf," with plate of case and woodcut of gastrophilus larva. Short abs. *Amer. Jour. Cut. and Gen.-Ur. Dis.*, vol. xvi. (1898), p. 297.

of curves and gyrations, though sometimes it goes straight, once, in my case, for seven inches in a day. The red line fades at the passive end in a few days, while the larva itself is from a quarter to an inch or more beyond the active end, where there is some itching and burning by which some adults can locate the larva. The larva may travel more or less actively for months; in my own case it was on the march for two and a quarter years, when it was apparently killed by a suppuration in the neighborhood of the track, but it is never the exciting cause of a suppuration. It may limit itself to a small area, *e. g.*, one cheek (Matschinsky), or travel all over the thigh and trunk, as in my case, sometimes rapidly.

Treatment.—Subcutaneous injections of carbolic and iodin

Fig. 111.—Larva of gastrophilus.

solutions failed in my case, only stimulating the larva to increased exertions; external applications had the same effect. Excision of a portion of skin (half an inch beyond the red line) is the only plan which has been successful. Samson-Himmelstjerna says the parasite can be located as a dark point by pressing the blood out of the skin with a lens; its removal would then be easy.

CRAW-CRAW.

This is a disease of the west coast of Africa, occurring chiefly in negroes. Conflicting accounts are given by different reporters, and further observations are needed before a definite conclusion can be arrived at.

Probably the term craw-craw is used rather loosely in Africa. I had a patient, an officer from the west coast of Africa, who

said he was told there that he had craw-craw, but what I saw was evidently tinea cruris. C. S. Grant, who practiced in West Africa, says that it is a kind of scabies, and is curable by itch treatment; others deny its curability by sulphur.

According to O'Neill * it is an eruption with papules, vesicles, and pustules, attended with violent itching, and looking like old scabies, but the eruption and itching decline if the patient goes to a cooler climate, and return in the hot, moist climate of the west coast.

If the top of a papule is shaved off, moistened with water, and placed under the microscope, a filarial organism, something like the filaria nocturna, may be found, but it has two distinctive black marks near the cephalic end, and is also shorter and broader (P. Manson).

Manson also draws attention to a possible fallacy, as in that part of Africa filaria perstans affects half the population, and might therefore be present without being the cause of the malady in question. Still, as craw-craw and filaria perstans have a similar geographical distribution, they may be etiologically related. Emily,* who has proved himself to be a good observer, says it is well known on the French Congo and the Upper Ubanghi district. It has a highly characteristic course and appearance.

"Commencing as a small reddish-brown macula, situated usually on the lower extremities, but also on the dorsal aspect of the hands and elsewhere, the disease from the first is attended by an intolerable itching, which forces the sufferer to scratch himself violently. A craw-craw ulcer, when fully established, is encircled by a zone of inflamed skin of the color of wine lees, and may attain the dimensions of a five-franc piece. It consists in an excavation with nearly perpendicular sides, and a granulating bottom whence thickish pus exudes. When exposed to the air this secretion hardens, covering the surface of the sore with a dense, impermeable pellicle, beneath which the pathogenic agents, whether specific or otherwise, doubtless pullulate freely. Craw-craw has been ascribed to the gonococcus.

* *Lancet*, vol. i. (1895), p. 265, with illustration of the worm.

† *Archives de Médecine Navale*, 1899; full account in *Lancet*, March 15, 1899, p. 782, from which the following description is quoted. Emily's paper was sent from Fashoda on December 8, 1898.

The ulcers are invariably multiple and may occur all over the body. Dr. Spire of Ubanghi has met with them on the penis, where they simulated chancres, the resemblance being accentuated by inguinal adenopathy."

Nicholls, in his report on yaws in 1893, describes "coolie itch" as he saw it in St. Lucia, and it resembled Emily's account of craw-craw in many respects, although derived from East Indian emigrants; while Numa Rat * in St. Kitt's described quite a different affection as "coolie itch," the papules being dry, and there being no vesicles, pustules, or ulceration.

According to Manson, the case reported by Silva Aranjo in Brazil as a case of craw-craw with chyluria and elephantiasis Arabum, in which he found embryo filaria, and one dead mature one in the urine, but none in the skin, is really a case of filaria nocturna, which is also well known as a cause of lymph abscess, tropical elephantiasis Arabum, and lymph scrotum.

Nielly of Brest in 1882 observed the case of a boy, æt. fourteen, who had never left France, with symptoms like craw-craw, and he found nematodes in the papules in all stages of development, some of them sexually mature females, very like the filaria described by O'Neill. They had two peculiar markings at the cephalic end, a well-defined alimentary canal, but rudimentary genitals. At one time it was associated with a nematode embryo. Probably, writes Manson, the skin parasite was an advanced form of the embryo of the blood, and both were the offspring of a mature worm somewhere in the tissues, the rhabditis Nielly. Nielly thought it belonged to a species of leptodera of the family of the anguillulidæ, a view with which Geber agrees, both for this and O'Neill's case. The natives consider that craw-craw is contagious, and that it has an incubation period of three days; but if it is a filarial disease, as above described, it could not, says Manson, be contagious, and must have a much longer incubation.

It is evident that there is a good deal of confusion on the subject. As far as I can judge Emily's account seems to me most likely to represent the real affection, but even there the pathology is left obscure, and perhaps Brault's conclusion is the right one. After analyzing the descriptions of previous authors, he says that it will ultimately be dismembered by fur-

* *Brit. Jour. Derm.*, vol. viii. (1896), p. 201, with photograph.

ther investigation, and cease to be considered a special morbid entity.

Treatment.—Hitherto relapses have taken place even after prolonged treatment and apparent cure. Emily, however, believes he has found a cure in boric acid.

The skin round the ulcer must first be made aseptic, removing hair and washing with soap, followed by corrosive sublimate solution. The ulcer itself is also cleansed with the perchlorid and boiled tepid water, wiping the base firmly with wet lint until all pus is removed.

Pure boric acid is then freely applied, followed by boracited vaselin and antiseptic bandaging; the pain of the above procedure soon subsides. After five or six days the dressing is removed and the ulcer will be healed.

DRACUNCULUS MEDINENSIS.*

Synonyms.—Filaria medinensis; Guinea-worm; Dracontiasis. This is the proper name for the disease, but it is rarely employed.

Definition.—A nematode worm of the genus dracunculus, which attains to maturity in the human body, and forms a subcutaneous abscesslike tumor, preliminary to its exit.

The disease is endemic in Arabia Petræa; the borders of the Persian Gulf and Caspian Sea, Bokhara, where it is universal; the East Indies, especially Bombay and Scinde, and the banks of the Ganges; in Upper Egypt, Nubia, Abyssinia, the coast of Guinea and the Gold Coast, and Mauritius; and occasionally in some of the West Indian islands and in Brazil.

Of all these places, on the West Coast of Africa and the Deccan it is most prevalent, affecting almost the whole population at some seasons of the year. It is only seen in Europe in those who have recently lived in its usual haunts. Domestic animals occasionally contract the disease, and it has also been observed in the dog.

* *Literature.*—"Science and Practice of Medicine," by Aitkin, seventh edition (Griffin, London), "Parasites," by Cobbold (Churchill, 1879), contains the bibliography up to date. "Guinea-Worm and Dracunculus," by J. A. B. Horton (Churchill, 1868). Manson's "Tropical Diseases," 1900.

Symptoms.—The worm gives rise to no trouble until fully developed, when it can be felt under the skin like a coil of soft string. It frequently migrates to a considerable distance from the point where it was first observed before it reaches its point of exit, and may keep up its travels for months. When about to escape, in the slighter cases, a sharply circumscribed pea-sized vesicle is formed, and may increase to the size of a filbert; its formation is preceded and accompanied by a feeling of tension and itching. When rupture occurs, either from scratching, poulticing, or puncture, a serous fluid escapes, which is clear if the worm is entire, but turbid if the young have escaped; a shallow ulcer or excoriation is exposed, corresponding to the size of the vesicle. In the center of this is a large pin-hole through which the white head of the worm may or may not be extruded. If not, Manson's procedure is as follows, in nearly his own words: A gentle stream of cold water from a sponge is allowed to fall on the opening, when a droplet of fluid, at first clear, then milky, comes up through the hole and spreads over the ulcer; or a pellucid tube, one-sixteenth of an inch in diameter, the prolapsed uterus, protrudes for about an inch, then suddenly fills with an opaque whitish material, ruptures, and collapses, discharging myriads of coiled-up sluggish embryos which straighten out in water and are one-thirtieth of an inch long and very active. Even without the stimulus of a cold douche, the head of the parent worm is usually gradually extruded, either at once or only after some delay. If not extruded at once, sometimes the wound closes, and another tumor forms in the neighborhood, but in a properly managed case, the removal is effected in from three to ten days, and the ulcer soon heals. In more severe cases violent inflammation may occur along the whole worm track, and there is then pain, redness, and swelling, followed by a copious purulent or ichorous discharge, hectic fever, and perhaps delirium.

This inflammation is liable to kill the worm and lead to its breaking during extraction—a very serious accident, which may result in crippling, gangrene, and even death from exhaustion, or from tetanus, the abscess bursting into the abdominal cavity, etc. These serious consequences are generally considered to be due to the escape of the embryos into the tissues, where they were once found by Böttcher. In more fortunate

cases, when the live worm is broken, it may be discharged at a later period by the formation of a fresh tumor. The point of exit is, in two-thirds of the cases, in the foot, especially in the heel; in about a fourth of the remainder, the exit is on the leg and thighs, and in exceptional cases it has occurred on the scrotum, hands, trunk, neck, head, nose, and orbit; in short, the worm has been found almost everywhere, except in the brain and eye. As a rule, there is only one worm, but sometimes two, and as many as fifty have been recorded (A. Farre), and Dr. Mircus of Lissa recorded a fatal case, where the whole body and skin were a network of guinea-worms. When the worm dies prematurely, before the skin is pierced, it may either set up an abscess or become cretified.

Pathology.—The female worm, to which this disease is due, has a uniformly cylindrical shape, one-tenth of an inch in diameter, and is usually from twenty-five to thirty inches long, though extremes of one foot and six feet * have been recorded, the African being larger than the Indian worm. The tail is pointed and curved into a hook, the head slightly convex, with a central mouth, surrounded by four small, equal papillæ and two larger. It is viviparous, inclosing an enormous number of embryos, and it reaches its destination in the following way, as discovered by Fedschenko of Turkestan. The embryos, which have escaped from man into water, penetrate the bodies of a minute crustacean of the genus cyclops (species quadricornis), where they undergo full larval development in five weeks in hot and nine or ten in colder climates. When the cyclops host is swallowed in the drinking water, or accidentally in bathing, the larvæ escape, undergo sexual development and impregnation in the human interior at an early stage of their existence, and the female then sets out on her migrations through the tissues, the male, which has never been discovered, dying, and being absorbed or cast out in the feces.

The impregnated female very soon makes her way into the connective tissue between the muscles, and grows quickly to some size, pains in the muscles sometimes testifying to her presence; but it is nine to twelve months from the date of her

* Ewart measured forty worms and found the extremes twelve and forty inches. It has been suggested that the worms of extreme length are really cases where two worms have been measured as one.

entrance into the body before the worm appears at the surface, and Busk says it may even be eighteen months.

Diagnosis.—The diagnosis can only be made when the worm can be felt under the skin like a coil of string, and its nature will become more certain, if it changes its position, before it forms the tumor preliminary to its exit.

Prognosis.—This is favorable unless violent inflammation occurs before or after the opening of the abscess, the consequences being especially serious when the worm is broken during extraction.

Treatment.—From what has been said the indication clearly is to remove the worm entire, or to bring about its death before it can discharge its embryos. This latter indication has been so effectually accomplished by Emily, a French naval surgeon, as to almost supersede other methods, the old plan of gradually winding the extruding pregnant worm on a quill or piece of wood having been justly abandoned as dangerous.

With a hypodermic syringe, Emily * injected a solution of 1 in 1000 perchlorid of mercury, either directly into the worm, if extruding, or if still under the unruptured skin, a few drops are injected through several punctures as near the coil as possible. Both methods kill the parasite and its embryos. In the first case, after twenty-four hours, the worm can be wound out without resistance. In the second she is absorbed without setting up any inflammation, a perfect cure being obtained in three or four days.

The improved extraction plan of Forbes, Dick, and Manson is to douche the part frequently with water, as related above, when the uterus will be gradually and naturally emptied of the embryos. This takes from fifteen to twenty days, and she no longer resists extraction, and will often issue forth spontaneously; if not, a little compulsion may be safely exercised, the worm being wound out on a quill or cedar pencil, but this must not be done until all the embryos are out. The saving of time by Emily's plan entitles it to the preference.

* *Brit. Med. Jour.*, July 7, 1894, p. 23. He treated on the Niger 105 cases in three months, and others have indorsed his statements.

CYSTICERCUS CELLULOSÆ CUTIS.

Rokitansky first demonstrated the presence of the cysticercus of tænia solium in the subcutaneous tissue, and cases have been reported by Lewin,* Guttmann,† Schiff,‡ and others. Indeed, Küchenmeister and Zürn state that at least five per cent. of all cases of tænia solium affect the skin. Most of the cases have been observed in North Germany, where half-cooked pork is more frequently eaten than in other countries. These small hydatids are rarely single, and usually very numerous, but do not appear together. They occur chiefly on the back and sides of the trunk, less frequently on the extremities. They are really subcutaneous, and appear externally as oval or roundish pea-sized tumors, as a rule, but varying from a lentil to a walnut. The skin over them is normal, and when the animal is alive the tumor is firmly elastic and movable. After death they shrink and become hard nodules, which are often calcified, but they take two or three years to become thus completely obsolete. They rarely give rise to pain or other inconvenience, unless they are unusually large, or exposed to pressure, or in the rare event of suppuration taking place; capillary hemorrhages may sometimes occur from degeneration of the vascular walls. Their interest lies chiefly in their diagnosis. Pye-Smith § showed a man of about thirty to the Dermatological Society in April, 1892, in whom there was a large number of pea- to marble-sized nodules imbedded in the subcutaneous tissue, chiefly of the upper part of the trunk, but also in the limbs, head, and neck, some of them being in lines. The skin over them was unaltered; they were quite firm to the touch, painless, and felt more like nodules than cysts, and this has been so in the other cases I have seen. Their real nature was not suspected until one was excised from the forehead, when they were found to be cysts containing embryos with a single circle of alternately large and small hooklets. Perrin read a case at the

* *Viertelj. f. Derm. u. Syph.*, vol. iv., Heft 4. and vol. xxvi. (1894), Heft 1 and 2.

† *Berl. klin. Woch.*, No. 26, 1877.

‡ *Lancet*, vol. i. (1879), p. 753.

§ "Case of Multiple Cysticerci of the Subcutaneous Tissues," *Brit. Jour. Derm.*, November, 1892, illustrated.

Dermatological Congress at Vienna, probably due to auto-inoculation. Galatti's case, a girl of ten, had a single hazelnut-sized growth of cartilaginous consistency just above the umbilicus.

These cysts may be mistaken for rheumatic nodules, gummata, lipomata, sarcomata, carcinomata, and sebaceous cysts. Careful consideration of all the circumstances * and symptoms will lead to a suspicion of their nature, which will be confirmed by excision, or even puncture, of one of the tumors, when the hooklets will be discoverable in the escaping fluid.

Echinococcus hydatid has also been reported as having been found in the skin by Davaine. It forms a semi-translucent, fluctuating tumor, with the skin over it unchanged. The parasite dies in one or two years, and the diagnosis would probably not be made without an exploratory puncture and discovery of the hooklets with the microscope.

Three cases of encapsuled rediæ, or **embryos of the distoma hepaticum,** have been collected by Küchenmeister. They were only diagnosed after removal.

Sharkey has found the **ova of Bilharzia hæmatobia** in some human skin sent to him from Cairo.

Arnold † of Bulawayo reports a case of what appeared to be boils, but closer examination showed that each lesion contained a larval form of worm one-third of an inch long.

Ankylostoma larvæ. Hitherto it has been supposed that this parasite obtained entrance to the body only through the mouth, but Looss ‡ suspecting that he had himself been infected through the skin, put a drop of water containing larvæ on the skin of a leg which was to be amputated in an hour. After-examination showed that the larvæ gained entrance chiefly by the hair follicles, then penetrated the papilla, and thence into the subcutaneous tissues.

* De Amicis had two cases who also had epileptiform convulsions, and in two other cases that I have met with this has been the first symptom to attract the patient's attention.

† *Lancet.* April 2, 1898, p. 960, with figure of parasite.

‡ *Centralblatt f. Bakt.*, May 30, 1901. Abs. *Brit. Med. Jour. Epit.*, November 23, 1901.

APPENDIX.

AN ANALYSIS OF FIFTEEN THOUSAND CASES OF DISEASES OF THE SKIN.

Statistics of diseases of the skin require a good deal of qualification before they can be accepted as tests of the frequency of any particular disease. Thus, the cases which are rebellious to treatment, such as tinea tonsurans, naturally gravitate in undue numbers to a special department. Cases which are relievable, but seldom curable, like both forms of lupus and psoriasis, and to a less extent tertiary syphilis, come back year after year, and are counted as fresh cases. On the other hand, cases which are easily recognized or easily curable, such as herpes zoster, molluscum contagiosum, etc., have a much smaller place than their real frequency would entitle them to. Again, very rare diseases, and even the less common forms of disease, such as lichen planus, with which many practitioners are unfamiliar, naturally find their way in undue proportion into dermatological statistics; while many new growths, such as fibroma, epithelioma, rodent ulcer, and vascular nevus, are quite as, or even more likely to go to the general surgeon, who also retains many cases of lupus and syphilis. Nevertheless, while the numbers must be taken, with these and other qualifications, as only roughly approximate, they have, if in sufficiently large numbers, a certain value, especially when compared with those of other countries and other workers. The round number fifteen thousand has been chosen because, while it is large enough to avoid the errors of a small series, it allows the ratio per thousand to be readily computed. The cases are, however, consecutive; but those patients who were admitted into the hospital directly—*i. e.*, without passing through the out-patient department—are not included, so that many cases of rare diseases, such as xerodermia pigmentosa, sclerodermia, leprosy, etc., have passed under my cognizance, but are not mentioned here, the tables being simply an out-patient record. But if tables of hospital practice must be taken with qualifications, those of private practice are still more open to fallacy, and only in quite a moderate number of diseases can a comparison between their frequency in rich and poor can be fairly made.

I have taken the patients of my last seven case books as the most representative of the class of cases which seek advice from a consultant with a special reputation for diseases of the skin. In one way private statistics are more accurate, as the same patient would not be counted

twice because he came in a different year. Readily curable and readily diagnosable cases are conspicuous by their absence or very small numbers. Few cases come to me which have not undergone previous treatment by their family practitioner, his extremity being my opportunity. Partly for this reason and partly that a large proportion of persons, unless they are very wealthy, are unwilling to pay high fees for young children, unless the disease is very obstinate or disfiguring, the proportion of children in private consulting practice is very much less than would be anticipated, especially when compared with hospital practice. Allowing for all these modifying circumstances, of course there are differences in the relative frequency of skin diseases in rich and poor. What may be termed dirt diseases are, naturally, nearly absent, and even when present due to other causes. Thus pediculosis as it affects the head and body, which constitutes 4 per cent. in hospital practice, only amonnts to one in one thousand in private. As regards pediculi pubis, owing to its being acquired chiefly in impure intercourse, it is even more common among the well-to-do; but this disease does not figure largely in my practice. Scabies, on the other hand, stands higher than would be expected in the list—over 1 per cent., as compared to 8 per cent. in public work; but this is because scabies in clean people seldom develops to any great extent, and is so often unrecognized by the family practitioner, and it is chiefly as a result of errors of diagnosis that it comes under my cognizance. Tinea tonsurans also stands high—viz., as 2 per cent. to 10 per cent. This, however, underestimates the frequency of it, as for the most part only the inveterate cases come under my notice in private. On the other hand, few cases of tinea circinata are in the list, as the family doctor cures it as easily as I should do. Impetigo contagiosa is a rare disease among the well-to-do; 1 per cent. as compared to 10 per cent., as the conditions for acquirement and propagation less often obtain. In lupus vulgaris the difference in the frequency is much greater than it appears—viz., as 1 to 1.3 per cent. The reason is that, on account of its obstinacy, nearly all cases of lupus vulgaris among the "classes" have consultant advice, if they can afford it. Lupus vulgaris is really a rare disease among the wealthy; the majority of sufferers, even in private practice, belong to the less prosperous members of the community. Lupus erythematosus is quite on another footing; for while it is only half as common as lupus vulgaris at the hospital, there are nearly twice as many in private—another argument against the two diseases being etiologically identical. The difference in frequency between eczema and psoriasis in private and hospital practice is not great, and as regards psoriasis, is more than explained by the recurrences in hospital practice being counted as new cases, while the seborrheids have not been differentiated from eczema in the hospital statistics; but lichen planus is twice as frequent in private —viz., as seven to three—because not only does it yield to treatment slowly, but it is often not recognized by the practitioner; possibly also the neurotic element in its etiology finds freer scope among the *clientèle* of the consulting room.

Diseases involving a loss of hair figure very high in the private statistics

—viz., 10 per cent. for ordinary forms of baldness and 3 per cent. for all forms of alopecia areata. This may be accounted for partly from this class of people being more sensitive on the subject; but probably a great part is personal, and the very large proportion—nearly eight hundred out of five thousand—has had a lowering influence in the proportion of other diseases. Its rebelliousness to treatment is probably another reason of the frequency of alopecia areata, as well as its conspicuous disfigurement; but believers in a universal neurotic theory for all cases would probably explain it as due to the greater sensitiveness of the nervous system of the wealthier classes; against this is to be set the preponderance of males. Rodent ulcer has also a high place—seven per thousand. As the dermatologist sees it, it is generally in an early stage, the more advanced cases usually resorting to the general surgeon. As might be expected, acne vulgaris and rosacea have a much higher ratio than in hospital patients, who, as a class, would not trouble about the slighter forms of those diseases. Many other comparisons might be made, but enough has been said to show that many other considerations come in besides the mere figures in comparing the two tables, and in estimating the relative frequency of diseases of the skin.

ANALYSIS OF 10,000 CASES OF DISEASES OF THE SKIN IN HOSPITAL OUT-PATIENT PRACTICE.

Class I. Hyperæmiæ:

Erythema	56

Class II. Exudationes:

Erythema exudativum, including 16 erythema iris	114
Urticaria	440
Prurigo	21
Eczema, all forms	2630
Dermatitis repens	5
Impetigo contagiosa	961
Furunculus	32
Carbunculus	3
Herpes zoster	61
" facialis	52
Pompholyx	11
Pemphigus	33
Dermatitis herpetiformis	10
Hydroa vacciniformis	1
Psoriasis	718
Pityriasis rubra	14
" rosea	40
Lichen planus	98
" scrofulosus	14
" pilaris	7
" circinatus (seborrheic dermatitis)	46
Vaccination eruptions	8
Dermatitis, unclassified	24
" artificialis	4
Drug eruptions	8

Class III. Hæmorrhagiæ:

Purpura	11

Class IV. Hypertrophiæ:

Ichthyosis and xerodermia	54
Papilloma	7
Keratosis palmæ	5
Sclerodermia	2
" circumscribed	6
Elephantiasis	6

Class V. and VI. Atrophies and pigment anomalies:

Chloasma	2
Nævus pigmentosus	2
Leukodermia	15

Class VII. Neuroses:

Pruritus	90

Class VIII. Neoplasmata:

(*a*) **Degenerative:**

Molluscum contagiosum	20
Xanthoma	3

(*b*) **Infiltrating:**

Lupus vulgaris	127
" erythematosus	63
Scrofulodermia	15
Syphilis, secondary, tertiary	540
" congenital	73
Lepra	6

(*c*) **Benign:**

Keloid	2
Fibroma	1
Nævus vascularis	3
Telangiectasis	3

(*d*) **Malignant:**

Paget's disease	1
Rodent ulcer	14

Class IX. Morbi Appendicium:

(*a*) **Sweat glands:**

Miliaria	30
Hyperidrosis	13
Chromidrosis	2

(*b*) **Sebaceous glands:**

Seborrhea	77
Milium (grouped)	1
Comedones (grouped)	7
Acne vulgaris	245
" rosacea	199
" varioliformis	15
Adenoma sebaceum	1

(*c*) **Hair Follicles:**

Canities	1
Alopecia	5
" areata	253
Sycosis	76
Folliculitis	5

(*d*) **Nails:**

Trophic nail affections	21

Class X. Hyphomycetic parasites:

Favus	3
Tinea Tonsurans, including 26 kerion	1031
Tinea circinata	272
" barbæ (severe)	6
" versicolor	29

Class XI. Animal parasites:

Scabies	796
Pediculi capitis	192
" corporis	197
" pubis	4

Class XII. Exanthemata:

Varicella	30
Other exanthemata	10
	10,000

ANALYSIS OF 5000 CASES OF DISEASES OF THE SKIN IN PRIVATE PRACTICE.

	M.	F.	Total.
Class I. Hyperæmiæ:			
Erythema congestivum	8	15	23
Recurrent scarlatiniform erythema	1	—	1
Class II. Exudationes:			
Erythema exudativum	12	28	40
" iris	7	17	24
Peliosis rheumatica	1	1	2
Urticaria	66	126	192
" pigmentosa	1	—	1
Eczema, all forms	516	460	976
Dermatitis repens	2	2	4
Impetigo contagiosa	34	17	51
Furunculus	17	11	28
Carbunculus	3	—	3
Herpes zoster	12	6	18
" facialis	4	8	12
" progenitalis	6	2	8
Pompholyx	3	3	6
Pemphigus	3	7	10
" foliaceus	—	1	1
" vegetans	2	1	3
Dermatitis herpetiformis	20	10	30
" æstivalis and hiemalis	5	16	21
Psoriasis	153	148	301
Pityriasis rubra	6	10	16
" rosea	26	36	62
Lichen planus	52	61	113
" variegatus	2	—	2
" acuminatus	—	1	1
" pilaris	2	1	3
" circumscriptus of Vidal	4	2	6
Dermatitis venenata	12	14	26
" Röntgen rays	1	—	1
" medicamentosa	5	8	13
" gangrænosa	1	5	6
Vaccinides	2	—	2
Class III. Hæmorrhagiæ:			
Purpura	2	1	3
Class IV. Hypertrophiæ:			
Ichthyosis	11	20	31
" hystrix	2	1	3
Verruca	21	26	47

	M.	F.	Total.
Class IV. Hypertrophiæ (Continued):			
Clavus	5	3	8
Keratosis palmæ et plantæ	6	4	10
" nigricans	1	—	1
Sclerodermia diffusa	—	3	3
" circumscripta	4	5	9
Class V. Anomalies of pigmentation:			
Lentigo	6	11	17
Chloasma	2	9	11
Arsenical pigmentation	2	3	5
Leuko- and melanodermia	7	14	21
Orange staining	3	—	3
Addison's disease	—	1	1
Class VI. Atrophiæ:			
Xerodermia pigmentosa	—	1	1
Striæ atrophicæ	1	—	1
Class VII. Neuroses:			
Pruritus, general	24	15	39
" local	42	41	83
" cerebri	5	3	8
Class VIII. Neoplasmata:			
(*a*) **Degenerative:**			
Molluscum contagiosum	3	9	12
Xanthoma	—	1	1
" diabeticorum	1	—	1
(*b*) **Infiltrating:**			
Lupus vulgaris	13	36	49
Scrofulodermia	2	4	6
Erythema induratum	1	—	1
Lupus erythematosus	14	76	90
Syphilis	99	28	127
Lepra	10	4	14
(*c*) **Benign:**			
Keloid	7	4	11
Fibroma (single)	—	3	3
Myoma multiplex	1	1	2

	M.	F.	Total.
(*c*) Benign (Continued):			
Nævus pigmentosus	6	12	18
" vascularis	4	8	12
Lymphangiectodes	1	2	3
Lymphangioma tuberosum multiplex	—	1	1
Adenoma sebaceum	—	1	1
Telangiectasis	7	38	45
(*d*) Malignant:			
Scirrhus, secondary	—	1	1
Epithelioma	5	3	8
Rodent ulcer	18	16	34
Paget's disease	—	1	1
Sarcoma	3	2	5
Mycosis fungoides	9	3	12
Furunculus orientalis	1	—	1
Papillary growths	1	2	3
Granuloma annulare	2	—	2
Class IX. Morbi appendicium:			
(*a*) Sweat-gland diseases:			
Miliaria and other sweat inflammations	5	15	20
Hyperidrosis	6	8	14
Bromidrosis	3	—	3
Hydrocystoma	1	—	1
(*b*) Sebaceous gland diseases:			
Seborrhea	18	63	81
Seborrheids	97	115	212
Sebaceous cyst	—	2	2
Milium	—	2	2
Hypertrophied sebaceous gland	—	1	1
Comedones only	—	3	3
Acne vulgaris	89	222	311
" rosacea	63	243	306
" follicularis	—	6	6
" varioliformis	4	—	4
" keratosa	—	5	5
(*c*) Hair follicles and hair diseases:			
Tinea nodosa	2	—	2
Trichorrhexis nodosa	—	2	2
Canities	12	18	30
Ringed hair	1	1	2
Hirsuties	—	87	87
Seborrheic alopecia	159	307	466

	M.	F.	Total.
(*c*) Hair follicles and hair diseases (Continued):			
Alopecia, other causes	7	20	27
" areata, all forms	158	133	291
Sycosis	30	—	30
Folliculitis	17	7	24
(*d*) Nail diseases:			
Various	13	21	34
Class X. Hyphomycetic diseases:			
Tinea tonsurans	72	31	103
" cruris	20	1	21
" circinata	7	8	15
" barbæ	16	—	16
" versicolor	9	6	15
Class XI. Animal parasites:			
Scabies	45	13	58
Pediculosis capitis	1	4	5
" corporis	4	7	11
" pubis	2	—	2
Ixodes	1	—	1
Bug-bites	1	—	1
Unclassified	36	58	94
Totals	2240	2843	5083

CLINICAL EXAMINATION AND STAINING OF BACILLI AND FUNGI.

This Section is by Mr. George Pernet.

Introductory Remarks.—To avoid repetition, cover-glass preparations are to be made in the following manner: A small quantity of the pus or a drop of the fluid to be examined is placed on a clean cover-glass. Another clean cover-glass is then placed on the material, and the two are gently pressed together, and carefully separated, so as to spread the pus or fluid as evenly as possible in a thin layer over the respective cover-glass surfaces. (Or two clean slides can be used in the same way.) The cover-glasses are then allowed to dry. The films are next fixed by passing the cover-glasses three times slowly through a spirit-lamp flame.

All stains should be freshly prepared, if possible, and filtered before using.

Before mounting in Canada balsam the preparations should be carefully dried, to get rid of all moisture, either with blotting (or filter) paper, or by holding the cover-glass, with film upwards, high up over a flame.

For other methods, staining of sections, and other details the following works can be consulted: "The Essentials of Practical Bacteriology," by H. J. Curtis, 1900; "Technik der histologischen Untersuchung," C. von Kahlden, Jena (1900), or Morley Fletcher's translation; "Methods of Pathological Histology" (1894); "Dermato-Histologische Technik," Max Joseph and Georg Löwenbach, 2d ed. (1901). Also the standard works on Bacteriology, etc., by Professors Edgar Crookshank, Robert Boyce, Sims Woodhead, and others.

I. ACTINOMYCOSIS (Actinomyces).

The yellowish * grains examined in glycerin, the cover-glass being gently pressed on to the slide, show the characteristic rosettes of clubs.

Or prepare films and stain by (*a*) **Gram's Method**.

1. Two to five minutes in a saturated anilin gentian violet solution (or in a saturated methyl violet solution prepared with 2½ per cent. aqueous carbolic acid).

2. Two minutes exactly in Lugol's iodin potassic iodid solution (iodin 1 part, iodid of potassium 2 parts, distilled water 300 parts = 1 : 2 : 300).

3. Rinse in absolute alcohol until no more violet color comes away (5 to 10 minutes).

4. Wash in water. Dry.

5. Mount in xylol-Canada balsam.

After washing and drying (*vide supra*, 4), films can be counterstained with a 5 per cent. watery eosin solution for a half minute; then 4 and 5 as above

II. ANTHRAX (Malignant Pustule).

(Bacillus Anthracis.)

Clean the part with soap and ether, then make small punctures with a a scalpel in the peripheral parts of the lesion. Examine the blood (cover-glass films). If seen early enough, the contents of the early bulla or pustule could be examined. Cases usually first come under observation when the central eschar has commenced to form or is formed. The bacilli are in great abundance under the eschar and about its edges.

Owing to the large size of this bacillus, it can be readily seen with an ordinary ⅛ or ⅙ (an oil immersion is not necessary), even without staining. (Nicolle and Morax.)

* According to Boström, the color of the grains is by no means so uniform and constant as believed. They vary from gray to yellow, green, and brown.—Kanthack, in *Journ. of Path. and Bacteriology*, October 1892, p. 146.

Cover glass preparations can be stained by Gram's method (*vide supra*, i.), or with a carbol-fuchsin (*vide infra*, v.).

A simple method is to immerse cover-glass for five minutes in common methyl violet solution, wash out most of the stain with absolute alcohol, clear with xylol, and mount in Canada balsam. (Barker.)

III. FAVUS (Achorion Schönleinii).

(*Vide infra*, vii. as for **Ringworm.**)

When yellow discs and cups are present, the material on the under surface of the crusts should be examined, as for ringworm scrapings.

IV. GLANDERS (Bacillus Mallei).

Cover-glass preparations of the pus do not stain by Gram's method.

Has special affinity for Löffler's methylene blue. To stain:

1. Five minutes in methylene blue.
2. Wash in water.
3. Dry.
4. Canada balsam.

NOTE.—MM. Nicolle and Morax point out that as the microscopical examination of the pus in man is frequently negative, it is necessary in such cases to make use of the inoculation test (male guinea-pigs). Migula (in "System der Bakterien," vol. ii. p. 199) makes the same remark, adding that the differential diagnosis of the bacillus mallei can only be made with certainty by cultivation and inoculation (male guinea-pig).

V. LEPROSY (Bacillus Lepræ, or Hansen's Bacillus).

A nodule is clamped at its base to render it bloodless (clamps have been devised for this purpose, but carefully squeezing with curved forceps will be found sufficient). It is then incised with a scalpel. Clear fluid then oozes out, and its quantity can be increased by pressure about the base of the nodule. (It is important not to get blood mixed with the exuding fluid.) A clean cover-glass is applied to the fluid, and films prepared (*vide* Introductory Remarks.)

Similarly, films may be prepared with the secretion of ulcers, or with the scrapings of broken-down mucous membrane lesions (uvula, etc.)

The bacilli readily stain by the following methods:

a **Ziehl-Neelsen Method.**

1. Five minutes in warm carbol-fuchsin solution (fuchsin 1, alcohol 10, concentrated carbolic acid 5, distilled water 100). The solution is heated in a test tube over a spirit-lamp flame, but *not boiled*, and poured on to cover-slip held by Cornet forceps.
2. Wash in water.
3. Place in 5 per cent. watery sulphuric acid, or a 15 per cent. watery nitric acid solution, until the film is completely decolorized.
4. Wash in water. (If the pink color reappears the cover-slip can be returned to the sulphuric acid solution, and back to water.)

5. One to two minutes in a 1 per cent. watery methylene blue solution.
6. Wash thoroughly in water, and carefully dry.
7. Mount in Canada balsam.

β **Gram's Method** can also be employed (*vide supra*, i.).

There are other methods, such as Gabbet's, etc.

VI. MADURA FOOT (MYCETOMA) (Streptothrix Maduræ of Vincent).

(As for **Actinomyces**, *vide supra*, i. See also p. 1349.)

VII. RINGWORM (1. Microsporon Audouini. 2. Trichophyton Megalosporon Endothrix. 3. Trichophyton Megalosporon Ectothrix).

Tinea Tonsurans.

Broken or short stumps should be selected with a lens, and placed on the end of a slide and treated with a drop or two of ether, to get rid of fat, ointment, etc. The hairs are then moved on to the center of the slide with a needle on holder, and examined in a drop of liq. potassæ B. P., the cover-glass being gently applied. As the preparation "clears," the fungus will be readily seen.

If a permanent preparation is required, it can be stained as follows:

α **Adamson's Method.***

When the preparation treated in the above manner has reached the desired stage of "clearing," gently wash under cover-glass a few drops of 15 per cent. mixture of alcohol in distilled water. The cover-slip is then removed. The specimen (either on slide or cover-glass) is treated with more of the 15 per cent. alcohol mixture, to get rid of the excess of potash, and it is then fixed by drying carefully over the flame of a spirit lamp.

Then:

1. Stain in gentian anilin violet for fifteen to sixty minutes.
2. One to five minutes in Gram's iodin solution.
3. Decolorize in anilin oil two or three hours or longer.
4. Remove anilin oil with blotting paper, and
5. Mount in Canada balsam.

β A more rapid method is the following of Brongersma of Amsterdam.

1. Place stump to be examined on a slide, and get rid of fat with ether.
2. Add a little anilin gentian violet solution. (Five minutes.)
3. Dry with blotting (or filter) paper carefully, and add potassium iodid iodin solution. (One to five minutes).
4. Dry as above, then add a drop or two of anilin oil, move the slide, then add a drop or two of anilin oil, to which a drop of hydrochloric acid has been added.
5. When as much stain as possible has been got rid of, again add anilin oil.
6. Xylol.

* *Brit. Journ. Derm.*, vol. vii. (1895), p. 376.

7. Mount in Canada balsam.

(The writer has found that stumps previously clarified in liq. potassæ B. P. can be made use of, and give good results by this method).

(Both the above are modified Gram methods.)

Tinea Circinata.

With a scalpel thoroughly scrape the affected skin, and treat the scrapings in the same way as above, the scales being fixed by passing three times through a spirit-lamp flame.

Tinea Unguium.

Scrape the affected nail thoroughly with the sharp edge of a slide. Clarify in a 40 per cent. solution of potash. This gives quicker results than the weak B. P. solution, but in any case a thorough and prolonged examination should be made, if necessary.

To stain (*vide supra*).

VIII. **TUBERCULOSIS (Bacillus Tuberculosis, or Koch's Bacillus).**

(Same methods of staining as for **Bacillus Lepræ**; *vide supra*, v.)

NATURAL MINERAL WATERS AND SPAS.

BOTTLED MINERAL WATERS.

The dermatologist makes use of the purgative, alkaline, and ferruginous nrtural mineral waters in the same way, and for the same purposes, as the general physician. The bromo-iodin and arsenical waters are of more special application.

PURGATIVE WATERS.

The directly purgative waters owe their action chiefly to sulphates of soda and magnesia in varying proportions. The principal are **Püllna, Friedrichshall, Hunyadi-Janos, Æsculap, Apenta,** and **Victoria Ofener.** Of these I use Friedrichshall for a mild and Hunyadi-Janos for a stronger aperient, but some prefer Püllna to Friedrichshall, as the latter contains a large quantity of chlorid of sodium, which they think is injurious in skin diseases; but this is not a sound objection, in my opinion. When the sulphates of magnesia and soda are in nearly equal proportions, the taste is much less objectionable than when one or other preponderates. For this reason I prefer Hunyadi-Janos, and the less known Hunyadi-Taszlo, which is a trifle stronger, to the more powerful Æsculap and Victoria Ofener; the last being the strongest purgative water known, but it contains a large preponderance of sulphate of magnesia, and is proportionately nasty. The "Franz Josef" spring is also a very strong aperient, and contains equal parts of the sulphates of soda and magnesia, 240 in 10,000. The dose of nearly all these is a wineglassful and upwards.

freely diluted with tepid water, and taken in the morning before breakfast. They are especially useful in fecal accumulation, which always aggravates, even when it does not produce, inflammatory diseases, such as eczema, acne, etc.

ALKALINE WATERS.

These are very numerous. Those of **Vals, Vichy, Ems,** and **Karlsbad** may be specially mentioned. Vals and Vichy are simply alkaline, and owe their properties chiefly to the bicarbonate of soda they contain. Those of Vals are the strongest, especially the Magdeleine, Précieuse, and Désirée springs. Those of Vichy are more generally employed, and though there are several springs they are practically of the same composition and value. They are useful to many dyspeptics with strongly acid urine, and in any skin disease, such as eczema or psoriasis, in which that condition is present; they should not, however, be continued too long, or they may aggravate instead of alleviating. A tumblerful of either Vals or Vichy may be taken twice a day.

Karlsbad Sprudel salt is a laxative as well as an alkaline; its chief constituents are sulphate and bicarbonate of soda, with a moderate quantity of chlorid of sodium. It is a great favorite of mine in gouty states and inactivity of the liver. A heaped teaspoonful of the dried salt dissolved in at least two-thirds of a tumblerful of warm water, and, taken before breakfast, generally gives one or two free evacuations, and there is no further trouble. It may be taken two or three times a week.

FERRUGINOUS WATERS.

The waters from Spa, Pyrmont, and Schwalbach are those chiefly employed.

Spa.—The Pouhon and Pouhon du Prince de Condé are the chief iron springs. That from the Prince de Condé is the only one imported. The iron is in the form of bicarbonate, along with sodic, magnesic, and calcic bicarbonates. Owing, however, to the lime being in small quantity, it has the great advantage of retaining its iron for a long period after being bottled; while most ferruginous waters contain a great deal of lime, which leads to the speedy deposition of the iron from solution.

Schwalbach.—The water from the Stahlbrunnen and Weinbrunnen is imported into England. The Stahlbrunnen is stronger and more stable from its containing less lime.

Pyrmont.—The Trinkbrunnen and Neubrunnen are a little stronger as regards iron than the respective springs above mentioned of Schwalbach, but they contain enormous quantities of lime.

On the whole, therefore, the Spa waters are the best; from one to four tumblers or more a day may be given in anemic and chlorotic states, or whenever iron is indicated. They are especially suited for patients with weak digestions, who do not tolerate iron in the cruder forms, and for whom expense is not a great object. A fair imitation may be made by adding ten minims of the liquor ferri perchloridi B. P. to half a pint of seltzer water.

Flitwick.—This is a remarkable spring in Bedfordshire, containing rather less than 170.8 grains of persulphate of iron to the gallon. It keeps well in bottles, but whether, as asserted, the iron is in a readily assimilable form requires further experience; it is well worth trying.

ARSENICAL WATERS.

The chief are those of Levico, Roncegno, La Bourboule, and Royat.

La Bourboule is a sodio-chlorureted and bicarbonated arsenical water, containing twenty-eight milligrams of sodic arseniate to the liter, or nearly two grains to the gallon. The other salts both of this and Royat are very similar to those of the blood. A large tumblerful is the average dose.

Royat.—The Saint Victor spring is the strongest; it contains only one-sixth of the quantity of arsenic contained in the waters of La Bourboule, but has more iron.

Levico is said to be the strongest arsenical water known, containing .086879 arsenious acid in 10,000 parts, or about one-twelfth of a grain per pint; it also has a considerable quantity of iron in the form of persulphate. The usual dose is a tablespoonful.

Roncegno is very similar to Levico, and the dose is the same. These waters are used chiefly in anemia and psoriasis, and like the ferruginous waters, are adapted for weak digestions and long purses.

BROMO-IODIN WATERS.

These are suitable for strumous and syphilitic subjects. The chief are those of Kreuznach, Purton, and Woodhall. The last is the strongest known, and contains nearly five grains of bromin and two-thirds of a grain of iodin to the gallon.

THE SPAS.

Far more efficacious than swallowing the imported waters is a visit to the spas themselves. It must, however, be borne in mind that there are many other elements beside the composition of the waters which make for success in the restoration of the patient. Among these are the climatic conditions, and the consequent change of air and scene, the regimen and regular hours, as well as the withdrawal from many of the temptations of society life. At some spas the topical use of the baths plays an important part; and last, not least, is the influence of hope and faith engendered in the carrying out of a new treatment in which there appears to be a little mystery, and in which the very expense and trouble stimulate the patient to do all that he can to get well, instead of carrying out the treatment in the half-hearted way in which patients at home are too apt to subordinate the means of cure to their engagements and convenience. Although, therefore, to such self-indulgent patients, a suitable spa may be the best means of cure, it must not be supposed that they are necessary to success, provided that a patient will give him-

self up to treatment at home, as completely as may be necessary for the kind of case.

A few of the principal spas will be specially noticed in alphabetical order.

Aix-la-Chapelle, Germany, is in a bowl-shaped valley on the Lower Rhine, near the Belgian and Dutch frontiers. The climate is mild, and the season is from May to October. There are four chief springs: the Kaiserquelle, the Quirinusquelle, the Rosenquelle, and the Corneliusquelle. They are hot, sulphureted waters, with a fair amount of chlorid of sodium. The Kaiserquelle, 131° F., is the hottest; the Corneliusquelle, 113.60°, the least so; in other respects, they are practically the same. They are chiefly employed for psoriasis and tertiary syphilis, for the latter in conjunction with mercurial inunctions. The system employed has obtained great celebrity and success, and is thus described by Berkeley Hill in his work on Syphilis:

"The patient is restricted to a tolerably precise regimen, which excludes bodily fatigue, excess of all kinds, and enforces regular hours of rest and gentle exercise. The diet is limited; many articles, such as fruit, likely to cause relaxation of the bowels, are forbidden, while milk is largely prescribed. The daily course consists of a bath in the hot sulphur water, and during the sweating thus induced, a dram of mercurial ointment is rubbed by an attendant into the skin of the patient. In this condition he remains for one or two hours, drinking a pint or more of the sulphur water during his sweat. He then rises, walks out, dines, and then walks again if weather permit. In the evening he goes early to bed, and thus prepares himself for a repetition of the treatment next day. Great care is taken to prevent salivation, both by watching the effect of the treatment and by insisting upon the use, several times daily, of an alum or other astringent mouth-wash. Tonics are also administered to weakly persons, and the treatment is modified in its strictness to suit their condition. The course occupies usually six or seven weeks, comprising forty to fifty rubbings. In this time all symptoms have usually disappeared, at least for a time, and the patient is dismissed by his physician, with an injunction to return for another course after an interval of two months."

Aix-les-Bains, France, on Lake Bourget, in a pleasant valley. The climate is good, but hot in the season (July and August), and May, June, and September are preferable. The waters are from two chief springs, the Eau de Soufre and the Eaux d'Alun (so called), which are practically identical, and, like those of Aix-la-Chapelle, hot and sulphurous. Their temperature is 112° to 116° F. There are three springs at Marlioz, about a mile distant from Aix-les-Bains, which are strongly sulphurous, but their temperature is only 57° F. The neighboring springs of Challes are of similar characters. Aix-les-Bains is chiefly resorted to in chronic gouty states, and is useful in gout, eczema, or psoriasis.

There are several sulphur springs in the Pyrenees, of which Eaux-Bonnes, Eaux-Chaudes, and Barèges may be specially mentioned. The first one lies some 2500 feet above the sea, and the stability of the sul-

phurous ingredients is said to be a distinguishing feature; it is powerfully diuretic, and is taken more for chronic lung than skin affections.

Contrexéville is prettily situated in the heart of the Vosges mountains about 1000 feet above the sea-level. There are five springs, of which the Pavillon is the most important and typical. The waters are alkaline, with a preponderance of lime salts. They contain also a little iron; they are not highly mineralized, so that large quantities must be imbibed. They are chiefly used for renal and bladder troubles, especially calculi, and for gouty states; and I have found them very useful for pruritus ani, due to hepatic disorder as it usually is.

Ems, Germany. The waters are alkaline, chiefly from bicarbonate of soda, and also contain some common salt. The chief springs are the Kränchen and Kesselbrunnen, and they are practically identical in composition, but the temperature is 115° F. in the Kesselbrunnen and only 85° at the Kränchen. The first is used mostly for baths, the other for drinking. The waters are especially useful in chronic bronchial and gastric catarrh, and are very beneficial in some cases of chronic eczema. The season is from May to September, July and August being the principal months. The air is bracing and pure, but in summer it is very hot.

Karlsbad, Austria, is a very celebrated spa, picturesquely situated 1,000 feet above the sea-level. The principal springs are the Sprudel, 165° F., the Mühlbrunnen, 126° F., and the Schlossbrunnen, 122° F. They contain sulphur and bicarbonate of soda, and a moderate quantity of chlorid of sodium. They are especially useful in gouty conditions with constipation, and are much resorted to for obesity, for sluggish conditions of the liver, gall-stones, and diabetes. The season is from April to October, but it is very hot in the summer, months, and many, therefore, prefer Marienbad, in which the climate is more bracing, as it lies higher, but the waters are cold, and nearly twice as strong as those of Karlsbad.

Kreuznach, in the valley of the Nahe, in Germany, has a warm, dry climate, and is noted for its bromo-iodated waters, which are the strongest, except Hall, in Austria, but not to be compared to those of Woodhall. The principal spring for drinking is the Elisenquelle. The temperature is 54.5° F. The principal constituents are chlorids of sodium, calcium, and magnesium, and bromid and iodid of magnesium, but these last are in very small quantity. The diseases for which the Kreuznach waters are most useful are tertiary syphilids and strumous diseases.

La Bourboule, Puy-de-Dôme, near Royat, France, is situated at a height of 2600 feet above the sea-level. It is noted for being one of the strongest arsenical waters known. The composition of the waters and their use have been described under "Bottled Waters." The chief spring is the Choussy-Perrière. The season is during July and August. It is especially useful in psoriasis.

Levico, in the South Tyrol, near Trient, 4880 feet above the sea-level, is not only stronger in arsenic than La Bourboule, but also contains pools with some persulphate of iron. There are two springs: the milder contains eight grains of proto- and persulphate of iron and $\frac{1}{120}$ of a grain of

arsenic to the pint, while the strong contains thirty-four grains of iron salts and $\frac{1}{12}$ of a grain of arsenic per pint. The water is brought down in pipes from the mountains behind Levico.

Louèche, or **Leuk,** in the canton of Valais, in Switzerland, is 4500 feet above the level of the sea. The quantity of salines in it is small, and it is chiefly useful as a thermal bath, the principal spring, St. Laurent, being 144° F. It is of value especially in a disease like psoriasis, in which prolonged soaking is beneficial, while its high altitude gives it claims as a sanatorium.

Marienbad, Bohemia, is about twenty-five miles from Karlsbad, and lies 900 feet higher, being at an altitude of 1900 feet; its climate, therefore, is cooler. The waters have the same character as those of Karlsbad, but are much stronger both in sulphate and bicarbonate and chlorid of soda, and are therefore more distinctly purgative. The chief springs are the Kreuzbrunnen and the Ferdinandsbrunnen, the latter being the stronger. It is recommended for the same class of cases as Karlsbad, when a more decided aperient action and a more bracing climate are required. Eruptions of gouty origins are especially suitable.

Mehadia, or the waters of Hercules, and **Pystjan**, both in Hungary, also have a high reputation, largely earned by the vigorous thermal treatment employed, the temperature of the springs at both places being very high.

Plombières, in the Vosges, is another lofty sanatorium, being 1310 feet above the level of the sea, and has a proportionately bracing climate. Its waters resemble those of Bath. They contain only a small quantity of salts, but the temperature ranges from 66° to 143° F., the hottest spring in Bath being 117° F. There is, however, an arrangement for "continuous baths," and it is, therefore, especially suitable for pemphigus and chronic psoriasis. One of its springs contains a minute quantity of arseniate of lime.

Roncegno is about an hour from Trient in the Tyrol. It is situated about 1600 feet above the sea, and contains in a liter of water .10960 of a gram of arseniate of soda and .11588 of arsenious acid, with small quantities of cobalt and nickel, 3 grams of oxid of iron, and a little phosphate and sulphate. It is therefore very like Levico, which is not far off. The water is brought down from the neighboring Mount Tesobo. The dose is a tablespoonful.

Royat, in the Puy-de-Dôme, is at an altitude of 1400 feet, and its salts so nearly approach those of the blood that Gubler calls them "mineral lymph." The principal springs are the César, Saint-Mart, and Saint-Victor. The first is little more than a pleasant table water, and its temperature is 84° F. All have some arseniate of soda; that of Saint-Victor is the strongest, both in arsenic and iron, besides containing a small quantity of lithia chlorid. They are, therefore, proportionately useful in anæmic states, and in gouty and rheumatic eczema and psoriasis. The season is from June to September.

Schinznach, Canton Aargau, Switzerland, are also sulphurous, and are much frequented, especially by French people. It lies 1150 feet above

the sea, in the valley of the Aare, and contains 37.8 cubic centimeters H_2S and 90 CO_2 per liter. The other constituents are unimportant.

Schwalbach, in Nassau, is very much like Spa, both in altitude and in its waters, with rather more iron, the Stahlbrunnen containing $5\frac{1}{8}$ as against 3 of the Pouhon.

Spa, in Belgium, contains some of the best chalybeate springs, the Pouhon being the strongest, containing .375 grains of carbonate of iron in sixteen ounces, or $3\frac{3}{4}$ grains to the gallon. It has an altitude of 1030 feet and is beautifully situated in a valley surrounded by pine-clad forests.

Vals, in the Ardèche, has an altitude of 2475 feet. The chief constituent of the springs is bicarbonate of soda, the Magdeleine containing no less than 509 grains to the gallon, the two other principal springs, Précieuse and Désirée, containing 100 grains less, while the strongest spring in Vichy (Célestins) contains 357 grains to the gallon.

Vichy, in the Allier, at the foot of the Auvergne Mountains, is one of the most celebrated alkaline spas. The springs resemble each other in the large quantity of bicarbonate of soda they contain, and are largely resorted to in rheumatic and gouty states. The Grande-Grille and the Célestins are the best known, containing more bicarbonate of soda and potash than the others. Gouty eczema is especially likely to be benefited by them.

The most celebrated English spas are:

Bath, altitude 100 feet, celebrated for its hot springs, the hottest being 117° F. The mineralization is rather scanty, but the baths are useful in psoriasis and rheumatism.

Buxton is in a valley surrounded by hills, at an altitude of 1000 feet above the sea-level; its climate, therefore, is more bracing than that of Bath. On the other hand, the temperature of the waters is only 82° F., though they are artificially raised to 95° F. The waters are, like those of Bath, only slightly mineralized.

Flitwick has a strong persulphate of iron spring; it has not much accommodation for visitors as yet. (*Vide* "Bottled Waters.")

Harrogate does not lie quite as high as Buxton, and is celebrated for the number and variety of its springs, of which there are nearly one hundred. Its sulphur springs are the most celebrated, but it also contains chalybeate and saline spas. It is useful in some gouty eczemas, but, like all sulphur springs, must be used with caution, and under expert supervision.

Purton, in Wilts, is a bromo-iodin spring, and useful for strumous subjects, but much weaker than the

Woodhall Spa, in Lincolnshire, which is the strongest bromo-iodin spring known, containing $5\frac{1}{2}$ grains of iodin, some of which is free, and 82 of bromin, to ten gallons. It contains also a large quantity of chlorids. It is especially useful for strumous, syphilitic, and rheumatic subjects, and is superior to the more widely known Kreuznach for such affections.

Strathpeffer, in Ross-shire, has lately come into note as a sulphur spring, though it also contains a valuable chalybeate spring containing about

one-third of a grain of carbonate of iron in the pint, with a large quantity of carbonic acid. The sulphur springs are some of the strongest known, containing more sulphureted hydrogen than any of the Harrogate springs, and more uncombined sulphur than either Harrogate or Aix-la-Chapelle, but the old sulphur spring of Harrogate contains nearly four times as much alkalin sulphid. The climate is mild, and the scenery beautiful. The waters are useful for the same class of cases as those of Harrogate.

Other mineral springs of Great Britain are:

1. Sulphurous: **Moffat** and **Cheltenham.**
2. Saline: **Cheltenham, Scarborough,** and **Leamington.**
3. Chalybeate: **Tunbridge, Cheltenham,** and **Brighton.**

FORMULÆ.

BATHS.

Simple and medicated baths are largely used in the treatment of skin diseases.

1. **Simple Vapor and Hot-air (Turkish) Baths** find but little employment in skin diseases, and would generally be injurious, but simple water baths are often used, both for their cleansing and soothing effects. They are, however, almost always injurious in eczema. The following shows the temperature range of the different varieties:

Bath.	Water.	Vapor.	Air.
Cold	40° to 65° F.		
Cool	65° to 75° F.		
Tepid	85° to 95° F.		
Warm	95° to 100° F.	100° to 115° F.	110° to 120°
Hot	100° to 110° F.	115° to 140° F.	120° to 180°, or more.

2. **Wet Pack.**—The wet pack is a modified bath, which is especially useful in extensive psoriasis to remove scales and to diminish hyperemia. A sheet is wrung out of cold or warm water, and the patient wrapped in it, then rolled up in a blanket; after remaining thus for from twenty to thirty minutes, or even more, the sheet is removed, the body rubbed dry, and then oil or a suitable ointment rubbed in to prevent the skin from cracking.

3. **Oil Packing.**—In highly inflammatory conditions, such as eczema, or pityriasis rubra, or acute inflammatory psoriasis, oil is preferable to water. Lint or linen dipped in the best olive oil is bandaged on, or the bandages themselves may be dipped in the oil, which must be quite fresh, as the least rancidity would produce irritation.

4. **Medicated Vapor Baths.**—These are generally either calomel or sulphur. The calomel vapor bath is very valuable in the treatment of syphilis; various forms of apparatus are sold for home use. From fifteen

to thirty grains of calomel may be volatilized with just sufficient water to excite the skin to moderate action. In public baths the preliminary steaming is often overdone; the consequence is that patients often faint during their use. At University College Hospital I find that the heat required to volatalize the calomel is enough to excite sufficient perspiration in most people, and since the steaming has been omitted, faintness is not induced. For sulphur baths one to two ounces of sublimated sulphur may be used, but this is rarely required for skin diseases, but is useful for rheumatic people, and is sometimes used for syphilitics to slightly irritate the skin, if there is any doubt about the disease having been sufficiently treated.

Medicated Liquid Baths are used for a variety of diseases, and are of divers kinds. The proportions mentioned below are those used at University College Hospital since they were first started by Tilbury Fox, and quoted from his work. They are estimated for a full-length bath with thirty gallons of water at a temperature of 90° to 95° F. The emollient, alkaline, and sulphuret of potassium baths are the most commonly prescribed.

1. **Emollient Baths** are made of: (*a*) Bran 2 to 6 lbs., (*b*) potato starch 1 lb., (*c*) gelatin 1 to 3 lbs., (*d*) linseed 1 lb., (*e*) marshmallow 4 lbs., (*f*) size 2 to 4 lbs., to 20 or 30 gallons of water. Use in all erythematous, itchy, and scaly diseases.

2. **Alkaline.**—(*a*) Bicarbonate of soda ʒ ij to ʒ x, (*b*) carbonate of potash ʒ ij to ʒ vj, (*c*) borax ʒ iij. The bicarbonate of soda may be used with bran liquor, made by infusing a gallon of bran. Use in eczema, psoriasis, urticaria, lichen, and prurigo, where there is much local irritation.

3. **Acid.**—Nitric or hydrochloric acid ʒ j, or a mixture of nitric acid ʒ j, or more, with hydrochloric acid in like quantity to thirty gallons of water. Use in chronic lichen and prurigo. The bath should be of porcelain.

4. **Iodin.**—Iodin ʒ ss, iodid of potassium ʒ ss, with ʒ ij of glycerin, or iodin ʒ j or more, with ʒ j or ʒ ij of liquor potassæ to thirty gallons of water. Use in scrofulous eruptions, in syphilis, and in squamous diseases.

5. **Bromin.**—Twenty drops of bromin with ʒ ij bromid of potassium. Use as the iodin.

6. **Sulphuret of Potassium.**—ʒ ij to ʒ iv to each bath. The balneum sulphuris co. of Startin, Sr., is made with ʒ ij of sulphur (precipitated), ʒ j of hyposulphite of soda, and ʒ ss of dilute sulphuric acid, with a pint of water, added to the usual thirty gallons of water. Use in itch, in chronic eczema, lichen, and psoriasis.

7. **Mercurial.**—Bichlorid ʒ j to ʒ iij, with ʒ j of hydrochloric acid; biniodid of mercury ʒ j, with ʒ ij of chlorid of sodium. Use in pityriasis rubra and the syphilodermata, especially with ulceration.

POULTICES.

Poultices in the time-honored form of bread and linseed meal should never be employed, as, unless used most carefully, they are simply cultivating media for germs. When warmth and moisture are required, the most unobjectionable forms are boric acid lint soaked in boiled water at

the desired temperature, or Gamgee tissue soaked in carbolic solution and covered with some waterproof. For simple moisture, the boric acid starch poultice, a favorite application of Jamieson for softening crusts and soothing inflammations of the skin, may be recommended.

Boric Acid Poultices.

℞ Acidi Borici . . . . . ʒ ii

Sig.—Add a teaspoonful of the powder to a tablespoonful of cold water starch, mix with a little cold water, then pour in a pint of boiling water, and stir till melted; let stand till cold; spread the cold starch thickly on pieces of cotton, cover with muslin, and apply to the part, changing the poultices every few hours.—Allan Jamieson.

SOAPS.

Much has been written of late years on the composition of soaps, both for the toilet and for therapeutic formulæ. For these purposes, chiefly through the advocacy of Unna, an excess of fat, superfatted soaps as they are called, have come into vogue. They find their chief use when the skin is very thin, as on the face, or when there is a tendency to eczema, but are inferior as cleansing agents to a well-made neutral soap. The importance of medicated soaps in dermato-therapeutics, as soaps are ordinarily used, has been much exaggerated, in my opinion. When one considers how little of the medicament is contained in the few grains of soap brought into contact with the skin in an ordinary washing, for how short a time it remains there, and how carefully it is rinsed and wiped off immediately afterward, the therapeutic result can at best be but slight and transitory. Of course, if applied with great thoroughness and left in contact with the skin for a considerable time, some result may be obtained, but complicated with the irritation which the prolonged application of soap nearly always produces, and in my opinion the same medicaments could have been applied more efficiently in other ways. With regard to the so-called antiseptic soaps still greater fallacies exist. Those said to contain perchlorid of mercury, for instance, rarely contain that salt, as its composition is generally altered in the manufacture. Curzio of Naples made experiments on the effect of this class of soap on the growth in cultures of staphylococcus aureus, and his results are significant:

Sublimated one per cent. soft soap was neither aseptic nor antiseptic even after twenty-four hours' contact. Sublimated one per cent. hard soap required twenty-four hours' continuous contact to have any real antiseptic value. Carbolic ten per cent. soap had less aseptic and no antiseptic value. Salicylic acid three per cent. and boric acid five per cent. are truly aseptic, and are both strongly antiseptic, boric acid being the weaker, and they prevent bacterial development in a few minutes.

Of course, so far as these various soaps, whose name is legion, act at all they act in the right direction, but the practitioner should not deceive himself as to their real efficacy. The chief makers of this class of soap

in England are Field, Midgley, Price, and Yardley, and in Germany, Beiersdorf, Eichoff, and Stiefel, whose soaps can also be obtained in this country

CAUSTICS.

1. **Arsenic.**—Arsenious acid gr. 10, artificial cinnabar ʒ ss, rose ointment ℥ ss (Hebra's Cosmé's paste); or it may be used as a powder with white sugar instead of the ointment.

2. Calomel ʒ ijss, bisulphuret of mercury ℈ij, arsenious acid ʒ j (Startin, Sr.). Use in lupus and strumous ulcers, rodent ulcers, and syphilis.

3. **Chromic Acid.**—A saturated water solution is excellent for warts. Gr. 5 to gr. 30 to water ℥ j for superficial glossitis, syphilitic or otherwise, and for syphilitic papilloma of tongue.

4. **Mercury, Acid Nitrate.**—B. P. solution; or pure mercury ℥ j, nitric acid (sp. gr. 1.4) ℥ ij (Startin, Sr.). Use in lupus, syphilis, verruca necrogenica, nevus, etc. The addition of ʒ j of arsenious acid to Startin's formula is sometimes made.

5. Mercury bicyanid gr. 2 or more to ℥ j of water. Paint it on in acne rosacea, and after two or three minutes wipe it off (Burgess).

Mercury Red Iodid.—Gr. 10 to gr. 20 to glycerin ℥ ss. Use in lupus and syphilis.

Mercury Perchlorid ʒ j, collodion ʒ vj. Lupus and syphilis (Startin, Sr.).

6. **Barium.**—Barium sulphid ʒ ij, zinc oxid and starch each ʒ iij. For a depilatory: Make into a paste with water, and put on thin coating for ten to fifteen minutes; then clean off and apply bland ointment (Duhring); or the same proportion of sulphid of sodium may be used; but depilatories are not recommended; they often excite dermatitis, and are no better than shaving.

7. **Iodin**—Liq. iodi fortis B. P. (1 in 8 of spirit) or a watery solution, iodin ʒ ss, potassium iodid ʒ j, water ℥ j. In glandular enlargements or lupus. **Coster's paint**, or paste, is iodin ʒ j or ʒ ij to colorless oil of wood tar ℥ j; apply with a stiff brush. Excellent for the early stages of ringworm. Morrant Baker prefers creasote, and Aldersmith oil of cade, to the ol. picis liquid. Vasogen-iodin ten per cent. does not stain.

8. **Lime, Vienna Paste.**—Equal parts of unslaked lime and caustic potash; make into a paste with alcohol immediately before using. For lupus vulgaris, scrofulodermia, and syphilis.

9. **Potash, Caustic**, solid stick, or saturated solution. For same as Vienna paste. Weaker solutions gr. 10 to 30 to ℥ j may be painted on, and washed off in a few seconds, to clean the surface, in chronic inflammations, *e. g.*, some cases of sycosis.

10. **Silver Nitrate**, solid stick; for lupus vulgaris, to be bored forcibly in, so as to plow up the diseased tissue, but it is very painful. Gr. 5 to gr. 40, in spirit of nitrous ether ℥ j, may be painted on in some cases of eczema and pruritus, especially about the anus and genitals, and in some other chronic inflammations.

11. Chlorid of zinc ℥ xvj, powdered opium ℥ jss, hydrochloric acid ʒ vj,

boiling water to ℥ xx; dissolve. To the solution add 1 dram of wheaten flour; mix smoothly in a mortar, and heat over a water bath until of a proper consistence (Middlesex formula). Lupus, epithelioma, rodent ulcer, etc.

12. Zinc nitrate one part, bread mass two parts. For same.

13. **Salicylic Acid.**—Glycerin ℥ j, salicylic acid enough to make a thick cream. To be applied on lint or painted on. For warts, lupus, and epidermic thickenings; ʒ j of carbolic acid or creasote may be added to diminish the painfulness of the application.

14. **Zinc and Mercury.**—Starch 37 parts, wheat flour 112 parts, perchlorid of mercury 1 part, dry chlorid of zinc 110 parts, iodol 10 parts, croton chloral 10 parts, bromid of camphor 10 parts, crystallized carbolic acid 10 parts. Mix them in a mortar in powder, then add gradually enough distilled water to form a homogeneous paste of a consistence of putty. It will keep a long time. The hands should be wetted when applying it, and the paste allowed to remain on from six to twenty-four hours (Jules Félix).

15. **Camphor, Carbolic Acid.**—Equal parts of camphor and carbolic acid are rubbed together in a mortar, and the result is a thick fluid. A good superficial caustic for lupus erythematosus and similar conditions. (Blackfriars Skin Hospital.)

LOTIONS.

STIMULANT AND ANTISEPTIC LOTIONS.

Mercury.

1. Perchlorid of mercury gr. 4. diluted nitric acid ʒ j, diluted hydrocyanic acid ʒ j, glycerin ʒ ij, water ℥ viij (Startin, Sr.'s, lotio hydrargyri bichloridi). Use in syphilitic eruptions, pityriasis versicolor, chloasma, freckles, etc.

2. Perchlorid of mercury gr. 1, distilled water ℥ ij = 1 in 1000 nearly. For syphilitic sores.

3. Perchlorid of mercury gr. 8, distilled water ℥ iv, sulphate of zinc and acetate of lead of each ℈ ij, alcohol ʒ ij. Paint on cautiously. Hardy's lotion for freckles.

4. Perchlorid of mercury gr. 6, diluted acetic acid ʒ ij, borax ℈ ij, rosewater ℥ iv. For freckles (Bulkley). Apply twice a day.

5. Perchlorid of mercury gr. 2, tincture of benzoin ʒ ss, almond emulsion ℥ j. For freckles (Duhring).

Silver.

6. Nitrate of silver gr. 2 to 10, water or spirit of nitrous ether ℥ j. For eczema, erythemata, and pruritus vulvæ et ani. Protargol gr. v. to gr. x, distilled water ℥ j. For prurigo, especially on the face.

Soft Soap.

7. Oil of cade, soft soap, and alcohol, equal parts, oil of lavender ʒ jss (Anderson). Similar to Hebra's tinct. sapon. viridis cum pice. Tar may

be used instead of oil of cade, or less oil of cade employed. For chronic eczema, psoriasis of the scalp or knee, etc.

8. Soft soap, or green soap, in alcohol, equal parts; Hebra's spiritus saponatus viridis. To remove scales of psoriasis and seborrhea. I frequently add thymol gr. xv. to ℥ j.

8*a*. Green soft soap alone is very useful for a similar purpose.

Sulphur.

9. Precipitated sulphur, alcohol āā ℥ j. For acne (Hebra).

9*a*. Sulphur, alcohol, ether, glycerin, carbonate of potassium, of each ʒ ij, rose-water ℥ viij for acne, or without the water, rubbed in for comedones.

10. Sulphurated potash ℥ ss, lime-water ℥ xvj. For pityriasis versicolor, pustular and parasitic diseases.

11. Sulphurated potash, sulphate of zinc, of each ʒ j, rose-water ℥ iv. For acne indurata (Bulkley). Duhring speaks highly of the same lotion for lupus erythematosus.

Tar.

12. Liq. picis carbonis ʒ j to ʒ ij, solution of the subacetate of lead ʒ j to ʒ ij, rose-water ℥ viij. For eczema and pruritus.

13. Liq. picis carbonis, diluted 1 to 40 or 1 to 80 with water or spirit, may be painted on in chronic eczema.

14. Liq. picis carbonis ʒ ij, calamin lotion ℥ viij.

Thymol.

14*a*. Thymol ʒ j, liq. potassæ ʒ j, glycerin ℥ ss, elderflower water ℥ viij. A good hair lotion for dandruff, etc. For other hair lotions see formulæ 43 to 48.

ASTRINGENT LOTIONS.

15. Collodion (not the flexible). Acts by mechanical compression. Useful in dilated vessels of acne rosacea, in lupus erythematosus, and in small superficial capillary nevi.

16. Hamamelis tincture 1 part to water 4 parts. For dilated capillaries.

17. Tannic acid gr. 40, French vinegar ℥ ss, water ℥ vijss. For seborrhea (Neligan), and in hyperidrosis.

18. Alum gr. 20, sulphate of zinc gr. 10, glycerin ʒ j, rose-water ℥ iv. For erythema, intertrigo, and eczema (Tilbury Fox).

19. Boric acid, a saturated solution. For eczema and erythemata.

ANTI-PRURITIC LOTIONS.

20. Alkaline solutions and certain antiseptics exercise most influence in this respect.

21. Borax ʒ ij, glycerin ℥ ss, water a quart. In urticaria, and as a wash for the head in seborrhea.

22. Borax, carbonate of ammonia, of each ʒ jss, glycerin ℥ j, diluted hydrocyanic acid ʒ iij, water ℥ xvj, diluted 1 to 4 times (Startin, Sr.). For vesicular and sebaceous diseases.

23. Carbonate of potash ʒ ij, water ℥ viij. In the early stages of eczema, to allay itching.

24. Sodium bicarbonate ʒ j or ʒ ij, glycerin ʒ jss, elder-flower water ℥ vj. Urticaria, some eczemas, and pruritus.

25. Liq. picis carbonis ʒ ij, water ℥ viij. For pruritus, urticaria, and eczema, when not too acute. Begin with weaker lotion for eczema.

26. Carbolic acid, 1 in 60 of water. For pruritus and urticaria.

27. Terebene ℥ j, water ℥ viij. For pruritus and urticaria.

28. Sanitas ℥ ij to ℥ iv, water to ℥ viij. For pruritus and urticaria.

29. Salicylic acid ʒ jss, borax ʒ j, glycerin ʒ j. Mix the acid, borax, and glycerin, heat gently until dissolved. This can then be diluted with glycerin, alcohol, or water to any extent. ℥ j of the first mixture, ℥ j alcohol, water to ℥ viij, is a good proportion. Very useful in pruritus and urticaria, and does not smell.

30. Menthol gr. 2 to gr. 10 to alcohol ℥ j.

31. Solution of subacetate of lead ʒ ij to ʒ iv, distilled water to ℥ viij. For same.

32. Perchlorid of mercury gr. 2, glycerin ℥ ss, chloroform water to ℥ viij. For same.

33. Diluted hydrocyanic acid ʒ j, corrosive sublimate gr. 1, emulsion of almonds or elder-flower water ℥ vj.

33*a*. Diluted hydrocyanic acid ʒ jss, solution of acetate of ammonia ℥ j, infusion of tobacco to ℥ viij. For pruritus ani seu vulvæ (Tilbury Fox).

33*b*. A similar lotion, but with tinct. digitalis ʒ iij, and rose-water instead of tobacco-water (Thompson).

34. Diluted hydrocyanic acid ʒ ij, borax ʒ j, rose-water ℥ viij. For senile pruritus (Neligan).

35. Carbolic acid ʒ j to ʒ ij, liquor potassæ ʒ j, linseed oil ℥ j. Mix and add oil of bergamot *q. s.* Shake before using (Bronson's anti-pruritic oil).

36. Potassium cyanid ʒ j, water a pint. To be kept in a dark place. For pruritus. Use with caution.

37 Benzoin (compound tincture of), or Friar's balsam. For pruritus vulvæ (Reeves). To be painted on undiluted, with a camel's-hair brush. An excellent plan.

38. Benzoic acid ʒ ij, glycerin ℥ j, water ℥ viij. For pruritus and urticaria.

SEDATIVE ASTRINGENT LOTIONS.

Lead.

38*a*. Lead.—Solution of the subacetate *m*v to *m*xx, glycerin *m*xv, water ℥ j. For erythema, eczema, excoriations, etc.

39. Lead with milk.—Solution of the subacetate ʒ j, fresh milk ℥ ij. Shake well together in a bottle. For eczema and other acute inflammations.

40. Lead, glycerin of subacetate of, B. P.—It may be painted on as it is in chronic eczema; in more active cases, it is diluted 1 part to 7 of glycerin at first, and the strength gradually increased. It may also be diluted with distilled water.

Liquor picis carbonis is frequently added to the above lotions from *m*ij

to the ℥ j upwards. In eczematous inflammations it should be used tentatively over a small area at first.

Zinc.

41. Calamin lotion. Powdered calamin ℈ij, oxid of zinc ʒ ss, glycerin *m*xv, rose-water ℥ j. For erythema and eczema, where there is little or no discharge, and for most actively hyperemic conditions. The addition of tincture of yellow ocher *m*xv and of tincture of raw umber *m*x, makes a very good imitation of the natural color of the skin, and therefore improves it as a face lotion.

In the skin department of Edinburgh boric acid gr. x, or precipitated sulphur gr. xv, are sometimes added to each ℥ j of the above lotion.

Bismuth.

42. Bismuth nitrate gr. viiss, oxid of zinc ʒ ss, glycerin *m*xv, hyd. perchlor. gr. ¼, rose-water ℥ j. For acne rosacea and other hyperemic conditions.

HAIR LOTIONS.

43. Strong liquid ammonia ʒ j, sweet almond oil ℥ j, spirit of rosemary ʒ iv, honey water ʒ ij. For baldness (Wilson).

44. Strong ammonia liniment ℥ ss, castor oil ℥ ss, purified spirit of turpentine ℥ ss, white precipitate gr. 15. Brush into the scalp with a hard brush (Tilbury Fox).

45. Tincture of cantharides ℥ j, distilled vinegar ℥ jss, glycerin ℥ jss, spirit of rosemary ℥ jss, rose-water to ℥ viij. To be sponged into the scalp night and morning (Tilbury Fox).

46 Expressed oil of mace ℥ ss, spirit of wine ℥ viij. To be sponged into the scalp (Bateman).

47. Perchlorid of mercury gr. ij, spirit of wine ℥ ij. Use with a stiff brush for seborrhea capitis, but not for more than two weeks at a time.

48. Vinegar of cantharides ℥ j, glycerin, ʒ vj, spirit of rosemary ℥ ij, rose-water to ℥ viij. To be sponged in night and morning.

49. Perchlorid of mercury gr. 2, chlorid of ammonium gr. 10, resorcin gr. 20, eau de cologne, ℥ ij, glycerin ℥ ij, rose-water to ℥ viij. For seborrhea capitis and alopecia.

50. Sozo-iodolate of soda ʒ ij or ʒ iij, eau de cologne ℥ ij, glycerin ʒ ij, rose-water to ℥ viij. For the same.

Nascent Sulphur.

51. Hyposulphite of soda ʒ iij, eau de cologne ℥ j, distilled or rose-water to ℥ viij, for lotion No. 1. Tartaric acid ʒ js, distilled water ℥ viij for lotion No. 2. Sponge in first No. 1 and immediately after No 2. Less trouble, but not quite so efficacious, is to shake up equal parts just before using. Nascent sulphur, sulphurous acid, and a very little sulphureted hydrogen, not enough to be objectionable, are produced (author's formula). This lotion may also be used for acne vulgaris, and whenever sulphur lotions are indicated. The proprietary article sulphaqua is made on a similar principle, but has an acid salt instead of tartaric acid.

SOOTHING AND PROTECTING OINTMENTS.

1. Spermaceti ointment B. P.

2. Simple ointment B. P.

Unguentum paraffin B. P.

3. Ceratum petrolei (Martindale): vaselin 2 parts, paraffin (135° to 140°) 1 part. Melt and stir till cold.

4. Lanolin ʒ vj, olive or almond oil ʒ ij. Lanolin alone is too sticky. Or lanolin ʒ v, liquid paraffin ʒ iij.

Cucumber.

5. Cucumbers 750 parts. Grate into a pulp, and add rectified spirit 250 parts. Pass through percolator to make spirit of cucumber. Then take lard 125 parts, spermaceti 85 white wax 8, spirit of cucumber 8. Melt the fats, put them into a warm mortar, and stir in the liquor.

Rose Ointment.

6. Lard ℥ j, white wax ʒ ij. Melt, and when half cooled add oil of bergamot *m* iij, otto rosar. *m* ij. Used as a basis with other ingredients.

Rumex.

7. Rumex root ℥ xviij, yellow wax ℥ ij, prepared lard ℥ xij. Bruise the root, boil for two hours in distilled water, strain and evaporate to ℥ iv. Add gradually the lard and wax already melted, and stir the whole until cold.

Any of the above ointments may be used as a menstruum for more active remedies.

SEDATIVE ASTRINGENT OINTMENTS.

Bismuth.

8. Bismuth oxid ʒ j, oleic acid ℥ viij, white wax ℥ iij. To be made in the same way as the oleate of zinc. To form an ointment, equal parts of vaselin, lard, or lanolin must be added. McCall Anderson strongly advocates this for eczema. Bismuth oleate may also be made by double decomposition.

Boric Acid.

9. Boric acid ʒ ss, benzoated lard ℥ j. It is very important that the boric acid should be ground into an impalpable powder; merely rubbing in a mortar is insufficient. Excellent in eczema, and as an antiseptic in wounds and excoriations. The British Pharmacopeia ointment is nearly double this strength and made with a mixture of hard and soft paraffin.

Lead.

10. Ung. diachyli (Hebra).—Boil, together olive oil ℥ xv, litharge ℥ iij ʒ vj, to a good consistence, and add ʒ ij of oil of lavender. For eczema, spread on linen and bind on. A simple way is to melt together equal parts of lead plaster and olive oil. These ointments are really oleates of lead.

11. Solution of the subacetate of lead *m* xv to *m* xxx, vaselin, lanolin, or lard ℥ j.

12. Lead (carbonate of) gr. 4, glycerin ʒ j, simple ointment ℥ j. For erythema (Tilbury Fox).

Zinc.

13. Unguentum zinci B. P.

14. Unguentum zinci oleatis B. P.

Bismuth and lead oleates may be made in a similar way.

ANTISEPTIC OINTMENTS.

Iodoform.

15. Iodoform gr. 3 to gr. 5, vaselin or lard ℥ j.

16. Iodol gr. 3 to gr. 5 vaselin or lard ℥ j.

17. Europhen gr. 5 to gr. 10, vaselin or lard ℥ j.

These ointments are valuable for pustular eczema and impetigo contagiosa. Mr. Gerrard, formerly Dispenser at University College Hospital, made trial of a large number of plans for rendering the odor of iodoform less penetrating and disagreeable. The addition of creolin *m*v to ℥ j of ointment, where there was not more than 20 grains of iodoform, was one of the most successful. An ointment made by macerating freshly ground coffee in melted lard, and straining, was also very good, but not readily prepared. The powdered oleate of zinc ℥ j, iodoform gr. 5 to gr. 20, destroyed much of the odor. Of the various substitutes for iodoform, europhen and loretin are the next most effectual, but nothing entirely replaces it as a destroyer of pus cocci, and probably also of tubercle bacilli.

Mercury.

15. Ammoniated mercury gr. 10, lard ℥ j. Specific for impetigo contagiosa after the crusts have been removed.

STIMULATING OINTMENTS.

Mercury.

Ung. hydrarg. ammon. B. P., ung. hyd. ox. flav. of the same strength as the ung. hyd. ox. rub. of the B. P., ung. hyd. nitrat. and also dil. B. P. All these are useful separately or combined, strong or diluted, in chronic eczema, seborrhea of scalp, and psoriasis.

16. Green iodid of mercury gr. 2 to gr. 15, lard ℥ j. For acne (Hardy).

17. Red iodid of mercury gr. 5 to gr. 20, lard ℥ j. For nodular syphilis, lupus, and acne indurata. A powerful preparation, to be used tentatively over a small area. Iodo-chlorid of mercury gr. 3 to gr. 10, lard ℥ j. To be used in the same way as the iodids.

Sulphur.

18. Iodid of sulphur gr. 10 to ʒ j, lard ℥ j. For acne.

19. Powered hypochlorid of sulphur ʒ ij, subcarbonate of potash gr. 10, lard ℥ j, oil of bitter almonds *m*x (Wilson). An excellent remedy for acne, but it must always be made with the recently prepared powder of the hypochlorid which has not been exposed to the air; if made with the liquid it decomposes and irritates. Half or even one-quarter strength is often sufficient

Tar and its Allies.

20. Ung. picis B. P. For psoriasis and chronic eczema. (*a*) Creasote (*b*) oil of cade, (*c*) ol. rusci, ʒ j or more of either to ℥ j of lard, is much used for psoriasis and chronic inflammations.

21. Tar ʒ j, camphor gr. 10, lard ℥ j. In chronic eczema and other inflammations with pruritus.

Lead.

22. Iodid of lead gr. 12, chloroform *m*xx, glycerin ʒ j, lard ℥ j. For eczema and psoriasis.

Miscellaneous.

23. Perchlorid of mercury gr. 2 to gr. 5, carbolic acid and olive oil of each gr. xx, zinc ointment ℥ j (Unna). For lichen planus.

LINIMENTS AND OILY PREPARATIONS.

Carron Oil.

1. Lime water, olive or linseed oil, of each equal parts. For burns and superficial dermatitis.

Calamin Liniment.

2. Prepared calamin ʒ ij, zinc oxid ʒ ss, lime-water and olive oil of each ℥ ss. Owing to the fact that zinc oxid saponifies olive oil somewhat readily, this liniment gradually thickens; should it become too thick it is best thinned by addition of olive oil just before using. For eczema and acute dermatitis of all kinds.

At St. Mary's Hospital ʒ j of lanolin is added, which makes it a less drying application, and is an improvement for some cases.

In the preceding the parts are wrapped in the oils, not rubbed with them. The following are rubbed in:

Carbolic Oil.

3. Carbolic acid 1 part, olive oil 19 parts. For pruritic eruptions.

Thymol Oil.

4. Thymol gr. 20 to ʒ j, olive oil ʒ ix. For seborrhea of the scalp, or in acute lichen planus.

Vasogen-Iodin.

Vasogen-iodin ten per cent. ʒ j, liquid paraffin B.P. ℥ j. For seborrhœa capitis, with or without moderate inflammation; also for chilblains. Even undiluted the advantage of this and valsol-iodin is that they do not stain the skin, while they are readily absorbed. In these and similar preparations the iodin is not present in the free state, but usually as the addition-product of an unsaturated fatty acid.

A similar preparation to vasogen-iodin ten per cent. can be prepared from the following formula: Iodin 10, strong solution of ammonia 6, oleic acid 32, liquid paraffin up to 100. This contains the ammonium salt of di-iodostearic acid.

Turpentine Oil.

5. Turpentine or oil of silver pine ʒ j to ʒ vj, olive oil to ℥ j. For psoriasis. Oil of cade is a good addition, ʒ j to ʒ ij to ℥ j.

6. Perchlorid of mercury gr. 2 to gr. 5, alcohol ʒ j, ol. pini sylvest. ʒ vij. For alopecia areata. Should not be kept for more than a week.

7. Camphor and chloral hydrate equal parts rubbed up together. It makes a thick liquid suitable for severe local itching.

8. (*a*) Oil of cade, (*b*) beech or (*c*) birch oil, ʒ j to ʒ iv, olive oil to ℥ j. For psoriasis, lichen planus, etc.

APPLICATIONS FOR LUPUS.

1. R. Zinci oxidi; amyli pulv. āā ℥ ¼; vaselini albi ℥ ss; hyd. oleatis (five per cent.) ℥ j; acidi salicylici gr. 20; ichthyol *m*xx; ol. lavandulæ *q. s.*; M. Fiat ung. Enough red Armenian bole or raw umber may be added to match the color of the skin. The ointment is well rubbed in and covered with potato-starch powder. It is used to produce a certain amount of absorption of the lupus tissue (Brooke).

2. My own formula is—Iodoform gr. 10; creolin *m*iij; adip. benz. ℥ j. To be rubbed in at night, and calamin lotion applied in the daytime.

3. Salicylic acid ʒ ss, collodion ℥ j, to be painted on for lupus erythematosus (Payne).

4. Resorcin gr. 10 or more, collodion ℥ j; for similar purposes. The weaker preparation should first be used, as resorcin and collodion sometimes have a distinctly caustic effect.

5. Benzolin. To be well rubbed in to remove the fatty scales of lupus erythematosus; an antiseptic ointment like the iodoform and creolin to be rubbed in afterward.

PASTES AND VARNISHES.

Pastes may be made hard or soft.

The hard pastes contain more or less gelatin. One of the most popular and generally useful is

Unna's Gelatin Paste.

1. Oxid of zinc, gelatin, of each ʒ jss, glycerin ʒ iij, aq. destill. ʒ iv. To this, as a basis, gr. 5 or gr. 10 of salicylic acid, resorcin, ichthyol, thiol, or other antiseptic may be added. The solid mass must be melted by placing the pot in hot water; it is then painted on and dabbed with wool, to prevent its sticking to the clothing. It is useful in subacute and chronic eczema and similar inflammations, where discharge is absent, or very slight. In hot weather, less glycerin and more gelatin may be added; but it does not solidify nicely in very hot climates. It is not adapted for hairy parts, as its removal is then painful.

2. This is only one of a series. One contains ʒ j of lard and all glycerin, instead of glycerin and water, with the same amount of zinc and gelatin; but the large amount of glycerin is sometimes an objection, as the gelatin will not dissolve.

Soft Pastes.

These can be applied like ointments, but spread on the skin, leaving a coating on it, and absorbing secretion, instead of sealing it up. One of the best is

Lassar's Paste.

3. Zinc oxid and powdered starch, of each ʒ ij, vaselin ℥ ss, salicylic acid gr. x. For eczemas and other inflammations, whether dry or moist, provided that the discharge is moderate. It should be spread thickly on and covered with butter cloth. When changed the old paste can be cleaned off with olive oil. In acute inflammation, leave out the salicylic acid for a time, or use milder antiseptics, such as thiol or ichthyol.

Ihle's Paste.

4. Lanolin, vaselin, zinc oxid, and starch, of each ʒ ij, resorcin gr. 10.

Unna's Paste.

5. Terra silicea ʒ j or ʒ ij to the ℥ j of zinc or other ointment answers well. According to Gründer, the substitution of ten per cent. of carbonate of magnesia for some of the other powders increases the absorbing power.

VARNISHES.

Pick's Varnish (Linimentum Exsiccans).

6. Tragacanth 5 parts, glycerin 2 parts, distilled water 100 parts. It may be made by slowly triturating the powder with the water, or by letting the tragacanth soak in boiling water. Other ingredients, such as antiseptics, may be added. Used for eczematous surfaces, but it is not a very comfortable application.

Elliot's Bassorin Varnish.

7. Bassorin 48 parts, dextrin 25 parts, glycerin 10 parts, water to make 100 parts. It is claimed that it keeps better than Pick's formula, which it resembles, bassorin being the chief constituent of tragacanth. Used in eczema, acne, seborrheic eczema, etc.

Unna's Ichthyol Varnish.

8. Ichthyol 40 parts, starch 40 parts, albumin 1 to 1½ parts, water to 100 parts. Another, without albumin, is ichthyol 25 parts, carbolic acid 2½ parts, starch 50 parts, water 22½ parts. Used for subacute eczema.

TRAUMATICIN.

9. This is best made with chloroform, the B. P. solution in bisulphid of carbon is too offensive to be useful. ʒ j of pure gutta-percha is digested in ʒ ix of chloroform, and the bottle shaken daily until a thick emulsion is produced. It takes two or three weeks to make properly. Chrysarobin and other medicaments can be added as required.

PLASTERS.

Emplastrum Fuscum of German Authors.

1. Camphor ʒ ss, black pitch ʒ vj, yellow wax ʒ ix, red oxid of lead ℥ ij, olive oil ʒ iv. To be melted together until a little burned. For boils.

Emplastrum Hydrargyri (German Formula).

2. Mercury ʒ iv, turpentine ʒ ij, yellow wax ʒ iij, red plaster ℥ jss. Spread upon linen. For acne rosacea, lupus vulgaris and erythematosus.

Plaster-Mull Hydrargyri (No. 88 Beiersdorf).

Mercury 20 parts, carbolic acid 10 parts, perchlorid of mercury 2 parts, zinc oxid 10 parts. For boils and carbuncles.

Paraplast Hydrargyri (No. 255 Beiersdorf).

Mercury 50 parts, carbolic acid 75 parts. For lupus erythematosus and nodular inflammatory infiltrations.

Salicylic Acid Plaster (Unna).

3. It is made of thirty-eight per cent. and fifty per cent. of the acid, equivalent to 25 or 30 grams of the acid on $\frac{1}{8}$ of a square meter. It is made by Beiersdorf of Hamburg, and is valuable for softening and removing corns, callosities, and other epidermic thickenings.

Salicylic Acid and Creasote.

4. This is a similar plaster, with the addition of creasote to diminish the pain produced when the plaster is applied to lupus vulgaris, for which it is a valuable application. It is made of various strengths, from twenty per cent. salicylic acid and four per cent. creasote up to forty per cent. of each. In both these plasters the salicylic acid is combined with caoutchouc and oleate of alumina into a magma, and spread on gutta-percha with a muslin backing. The salicylic acid is much more efficacious than when incorporated with the plaster basis, as is usually done. Unna has also used lanolin, with a small quantity of caoutchouc, as an excipient.

Emplastrum Vigo cum Mercurio.

5. Simple plaster 2000 grams, yellow wax 100, resin 100, ammoniacum gum 30, bdellium 30, olibanum 30, myrrh 30, saffron 20, mercury 600, liquid purified storax 300, larch turpentine 100, and oil of lavender 10. A blunderbuss handed down from the Middle Ages, and serviceable still. Much used in France for lupus and syphilitic infiltrations.

Vidal's Emplastrum Rubrum.

6. Red lead gr. 39, cinnabar gr. 23, diachylon plaster ʒ j. Used for lupus, boils, pustular folliculitis, and ecthyma.

Another formula is red lead 10, cinnabar 6, diachylon plaster 100.

DUSTING POWDERS.

Zinc.

1. Oxid of zinc 1 part, powdered rice or maize, starch, or kaolin 3 parts.

2. The same with $\frac{1}{2}$ part of calamin or $\frac{1}{2}$ part of iris root. For excoriated surfaces, intertrigo, and eczema.

Mercury.

3. Calomel 1 part, and powders 1 or 2, 3 to 6 parts. For erythema of buttocks, etc., in congenital syphilis, condylomata, etc.

Creasote.

4. Creasote *m*xvj, kaolin ʒ j (Marshall). For erysipelas, erythema, eczema, etc.

Tar.

5. Wood tar 1 part, kaolin 4 parts (Sangster). For the same.

Boric Acid.

6. Impalpably powdered boric acid 1 part, and kaolin, rice, starch, or white fuller's earth 3 parts. A very good powder for intertrigo.

Camphor.

7. Camphor ʒ ss, alcohol *q. s.*, oxid of zinc and starch āā ʒ j. Use as a powder to allay the burning heat of eczema (Anderson).

PARASITICIDES.

Animal Parasiticides.

1. The ung. sulphuris B. P. For scabies and vegetable parasitic eruptions.

2. Sulphur ʒ ss, ammoniated mercury gr. 5, sulphuret of mercury gr. 10. Mix and add olive oil ʒ ij, lard ʒ ij, creasote *m*iv = ung. sulphur co. of Startin, Sr., for scabies.

3. *Wilson's Formula.*—Sulphur ʒ j, carbonate of potash ʒ ij, benzoated lard ʒ v, oil of camomile ʒ ss. Less irritating than B. P.

4. *Helmerich's Formula.*—Sulphur ʒ ij, carbonate of potash ʒ j, lard ʒ viij.

5. *Hardy's Formula.*—Sulphur ʒ j, carbonate of potash ʒ ss, lard ʒ vj.

6. *Wilkinson's Formula.*—Sulphur, tar, and lard, of each ʒ ij; precipitated chalk ʒ j, sulphid of ammonium ʒ ss. For tinea tonsurans and scabies.

7. *Hebra's Formula.*—Sulphur, oil of beech or oil of cade, of each ʒ iij, lard and soft soap, of each ʒ viij, prepared chalk ʒ ij.

8. *Naphthol.*—Naphthol 15 parts, prepared chalk 10 parts, lard 100 parts, soft soap 50 parts. For scabies, psoriasis, etc. (Kaposi). An excellent remedy; does not irritate like sulphur. Sometimes it is better to omit the soft soap.

9. *Cazenave's Solution.*—Iodid of sulphur, iodid of potassium, of each ʒ jss, water ʒ xxxij.

10. *Liquor Calcii Sulphidi.*—Slaked lime ʒ j, sulphur ʒ v, water ʒ xx. Boil for half an hour and filter. Make the quantity up to ʒ xx. For scabies and psoriasis.

11. *Vlemingkx's Solution.*—Slaked lime ʒ ij, sulphur ʒ iv, water ʒ xx. Boil in an iron vessel, and stir with a wooden spatula to a perfect union. For scabies and acne.

12. *Storax.*—Liquid storax ʒ j, lard ʒ ij. Melt and strain. For scabies and psoriasis.

12*a*. Ung. staphisagriæ B. P. For pediculi corporis.

13. Carbolic acid solution 1 in 40. Sponge along small portions of hair to destroy nits.

Mercury.

14. Ung. hydrag. ox. rub. B. P. For pediculi capitis.

15. Ung. hyd. ammon. B. P. For pediculi capitis.

16. Perchlorid of mercury gr. 4, acetic acid ʒ ss, water ʒ viij. For the nits of pediculi capitis; sponge small portions of the hair with the lotion.

Vegetable Parasiticides.

For early stages of ringworm or favus of scalp, blistering applications will often arrest the disease. They should not be used for children under six.

17. *Coster's Iodin Paint* (see Caustics, F. 7).—Paint on firmly, and let a crust be formed; remove this, and renew paint.

18. Hydrag. perchlor. gr. 2 to gr. 4, acetic acid or glacial acetic acid ʒ j. Makes a blister (Aldersmith). Use cautiously over a small area at a time, as it is a painful application.

19. Acetum cantharidis B. P.

20. Glycerin of carbolic acid B. P., or even 1 in 3.

Strong Applications for Later Stage of Ringworm.

These also should not be used in strumous children or those under six years of age, and at all times with caution and over a limited area at first.

21. Nitrate of mercury ointment, sulphur ointment, and carbolic acid in equal proportions, either diluted or not, as required. A good, but dirty preparation. It should be made without heat, and the carbolic acid thoroughly incorporated with the sulphur ointment before the citrine ointment is added, and this last should be free from excess of nitric acid (Aldersmith).

22. *Croton Oil.*—As a liniment, croton oil 1 part, olive oil 3 parts, cautiously increased. Use cautiously over about ⅛ in. square at a time. The pure oil may be used to individual hairs, a minute drop being introduced into the hair follicles with a needle.

Boric Acid.

23. *Boric Acid.*—Boric acid gr. 20 or *q. s.*, sulphuric ether ʒ j, rectified spirit ʒ j. To make a clear saturated solution. To be dabbed on with a sponge, so as to soak into the scalp (Cavafy).

Chrysarobin.

24. Chrysarobin gr. 10 to gr. 20, benzole ʒ j.

25. Chrysarobin gr. 7, chloroform ʒ j (Aldersmith). For same purpose as boric acid solution.

26. Chrysarobin ʒ ss to ʒ ij, lanolin c. oleo ʒ j. For ringworm of scalp, fork, and axillæ, and tropical forms; also valuable in alopecia areata. Patients should be warned of the possibility of its producing erythema.

27. Goa powder, which contains eighty per cent. chrysarobin, may be substituted.

Mercury.

28. Perchlorid of mercury gr. 1 to gr. 3 in alcohol ℥ j.

29. Perchlorid of mercury gr. 2 to gr. 5, *q. s.*, in lard ʒ j.

30. (*a*) The yellow oxid, (*b*) the ammonio-chlorid, and (*c*) the nitrate of mercury, are all parasiticides, but rather mild ones, and adapted for tinea circinata, (*a*) oleate of mercury four to twenty per cent. with or without lanolin, a very good preparation.

Salicylic Acid.

31. Salicylic acid gr. 40 to gr. 60, alcohol ʒ vj, ether ʒ ij. Or:

32. As an ointment in the same proportion to ℥ j of lanolin c. oleo. I have also used Unna's plaster with some benefit, and the glycerin cream over a limited area.

32*a*. Salicylic acid gr. 10, collodion ℥ j. Paint on for a week, then remove forcibly, one blade of epilation forceps being inserted beneath the collodion, then the pellicle pulled off; it brings a large portion of the diseased hair stumps away; but as the removal is rather painful, the treatment is not suited for the very young. When the scalp is clear, renew the application.

Thymol.

33. Thymol ʒ ss to ʒ ij, lanolin ℥ ij. Thymol and menthol ʒ ss to ℥ j of chloroform or spirit and ether (Malcolm Morris). Thymol may also be combined with copper oleate ʒ j; thymol ʒ j, sulphur ʒ j, lanolin and lard to ℥ j.

Copper Oleate.

34. Pure oleate of copper ʒ ss to ʒ ij: lanolin c. oleo ℥ j. Valuable for tinea tonsurans. It is especially valuable at an early stage, as it renders wholesale epilation comparatively painless after it has been rubbed in for a few days.

May be combined in equal proportions with mercuric oleate.

35. *Sulphurous Acid* —Pure, or with an equal quantity of water. For tinea versicolor.

36. Hyposulphite of sodium ʒ vj, water ℥ viij. For tinea versicolor and tinea cruris.

All the sulphur preparations are vegetable, as well as animal parasiticides.

37. Borax ʒ iv, glycerin ʒ ij, water ℥ vj. For tinea versicolor. Also glycerin of borax B. P. for lichen circinatus, tinea versicolor, and erythrasma.

Resorcin.

38. Resorcin ʒ j, lanolin ʒ j, and liquid paraffin ʒ iij.

In some cases oleate of copper ʒ j is a useful addition.

Turpentine.

39. Perchlorid of mercury gr. 2, alcohol ʒ j, turpentine ℥ vij.

40. The ol. pini sylvestris is less unpleasant than ordinary turpentine, and ʒ j of oil of lavender may be added. For tinea tonsurans and alopecia areata.

PILLS.

Laxative.

1. Aqueous extract of aloes gr. 1, extract of belladonna and extract of nux vomica, of each gr. $\frac{1}{6}$. Mix. Take one every night. For chronic constipation.

2. Aloin gr. $\frac{1}{6}$, strychnia gr. $\frac{1}{60}$, extract of belladonna leaves gr. $\frac{1}{6}$. For the same (Schieffelin).

Arsenic.

3. Arsenious acid gr. 1, extract of hop 3 j. Mix, and divide into 30 pills. Take one three times a day after meals. For psoriasis, etc.

4. *Asiatic Pills.*—Arsenious acid gr. 66, powdered black pepper 3 ix, gum-arabic and water *q. s.* Divide into 800 pills; each pill contains .0825, or $\frac{1}{12}$ of a grain of arsenious acid. This formula is much used on the Continent, and Hebra gave three pills once a day immediately before dinner, increasing the number according to the tolerance of the patient and the obstinacy of the disease. It is, however, much safer to begin with one after meals, as they are less likely to derange the digestion.

5. Arsenate of soda gr. 1, water sufficient to dissolve, powdered guaiacum 3 ss, oxysulphuret of mercury gr. 20, mucilage *q. s.* Divide into 24 pills. One three times a day (Wilson).

6. Arsenate of soda gr. 2, extract of hop gr. 20, sulphate of iron gr. 20, extract of nux vomica gr. 3. Divide into 24 pills.

7. Arsenate of iron gr. 3, extract of hop 3 j, powdered marshmallow 3 ss, orange-flower water *q. s.* Divide into 48 pills; each contains $\frac{1}{16}$ of a grain of arsenate of iron (Biett).

8. Iodid of arsenium gr. 2, manna gr. 40, mucilage *q. s.* Make 40 pills.

It is very questionable, considering the smallness of the dose, whether there is any material difference in the action of these different salts of arsenic, except so far as they differ in the relative quantity of arsenic they contain. It is always safer to give the arsenic after meals, and where there is irritability of stomach from its use, opium may be combined with it.

Phosphorus.

9. Phosphorus is sometimes useful in psoriasis as a nervine tonic, and according to Burgess, in lupus. It is, however, so difficult to make up into pills, that unless the druggist is skillful either an inert substance or unequal dosage is produced. It is better to order them, therefore, in the ready-made form of coated pills, which are now furnished by so many reliable English and American houses.

POWDERS.

1. Precipitated sulphur gr. 10 to gr. 60, acid tartrate of potassium gr. 10 to gr. 20, powdered ginger gr. 2, white sugar gr. 20. Take in milk night and morning for hyperidrosis of hands and feet, etc.

Pulvis Rhei cum Soda.

2. Powdered rhubarb gr. $1\frac{1}{2}$, dried bicarbonate of soda gr. 2, powdered ginger gr. $\frac{1}{2}$. (East London Hospital for Children.)

Pulv. Rhei Hydrargyrata.

3. Pulv. rhei c. soda gr. 4, hyd. c. cret. gr. 1. (East London Hospital for Children.)

Either is very useful as an alterative powder for children.

MIXTURES.

Aperient.

1. Magnesium carbonate gr. 15, magnesium sulphate ʒ j, peppermint water ʒ j.

2. The same, with the addition of the wine of colchicum *m*xv in gouty states.

3. Magnesium sulphate, sodium sulphate, each ʒ j, tincture of belladonna *m*v, syrup of ginger ʒ ss, infusion of cloves to ℥ j. For scybala.

4. Magnesium sulphate ʒ j, compound tincture of cardamoms *m*xx, compound infusion of roses ℥ j.

5. Sodium bicarbonate gr. 10, pulv. rhei gr. 4, tincture of hyoscyamus *m*x, dill water ℥ j. A mild aperient for dyspeptic conditions.

6. Cascara sagrada liquid extract *m*xv, tincture of belladonna *m*v, infusion of cloves ℥ j.

Diuretic.

7. Acetate of potassium gr. 15, bicarbonate of potassium 10, spirit of juniper *m*xv, infusion of broom ℥ j. Before meals, well diluted.

For Dyspepsia.

8. Sodium bicarbonate gr. 10 to gr. 15, sal-volatile *m*x, compound infusion of gentian ℥ j. Half an hour before meals.

9. Sodium bicarbonate gr. 10, tincture of nux vomica *m*v, glycerin *m*xv, compound infusion of orange peel ℥ j. Ten or fifteen drops of the cascara sagrada liquid extract is often a useful addition. To be taken half an hour before meals.

10. Bismuth carbonate gr. 10, sodium bicarbonate gr. 10, compound powder of tragacanth gr. 10, infusion of orange ℥ j, tincture of nux vomica *m*v.

For Atonic Dyspepsia and as a Tonic.

11. Diluted nitro-hydrochloric acid *m*x to *m*xv, glycerin *m*xx, tincture of cascarilla ʒ ss, water ℥ j. The same with sulphate of magnesium ʒ j is often useful in bleeding piles.

12. Diluted phosphoric acid *m*xv, tincture of nux nomica *m*v, glycerin *m*xx, water to ℥ j.

Ferruginous.

13. Citrate of iron and ammonium gr. 10, citrate of potassium gr. 10, syrup of tolu *m*xx, infusion of calumba ℥ j.

14. Citrate of iron and quinine gr. 5, syr. aurant *m*xv, water ℥ j.

15. Mist. ferri comp. B. P.

16. Sulphate of iron gr. 2, sulphate of magnesium ʒ jss, diluted sulphuric acid *m*xv, infusion of quassia to ℥ j. For acne vulgaris, eczema, etc. "Startin's [the elder] mixture."

17. Syrup of the iodid of iron B. P. ʒ ss to ʒ j, in water after meals. The water must be added only just before it is taken. For lupus and strumous affections generally.

All iron mixtures should be taken immediately.

Arsenical.

18. Fowler's solution *m*ij to *m*x, tincture of hop ʒ ss, water ℥ j. For psoriasis and other dry scaly eruptions, and for recurring vaso-motor disturbances, such as urticaria, pemphigus, hydroa.

19. Fowler's solution *m*iv, steel wine ʒ j, simple syrup *m*xx, water ℥ j.

20. Fowler's solution *m*v, citrate of iron and ammonium gr. 5, infusion of quassia ℥ j.

21. The solution of arsenate of soda may be substituted in any of the above for Fowler's solution, but it contains little more than half the amount of arsenic present in the latter.

22. Hydrochloric solution of arsenic *m*iv, diluted hydrochloric acid *m*vij, tincture of perchlorid of iron *m*x to *m*xx, water ℥ j.

All these arsenical mixtures should be given well diluted immediately after meals.

Mercurial.

23. Perchlorid of mercury gr. $\frac{1}{80}$ to $\frac{1}{8}$, diluted hydrochloric acid *m*x, infusion of quassia ℥ j.

24. Perchlorid of mercury gr. $\frac{1}{16}$, iodid of potassium gr. 5, infusion of calumba ℥ j, sal-volatile *m*xv. For syphilis, especially in the tertiary stage.

25. Liquor arsenii et hydrargyri iodidi, or Donovan's solution, dose *m*v, to *m*xxx, with a bitter infusion ℥ j, contains one per cent. each of the iodids of arsenic and mercury. It is useful in lichen planus and many chronic scaly eruptions, as well as syphilids.

26. Bicyanid of mercury gr. $\frac{1}{16}$, infusion of quassia ℥ j.

Donovan's solution is used in the tertiary stage of syphilis. Many use the other mixtures quite early; for my own part, I use them chiefly in the later secondary and tertiary periods.

27. **Decocta Zittmanni.** *Strong.*—R. radicis sarsæ concisæ ℥ xij, aquæ fontanæ libras lxxii.—Digest for twenty-four hours, then add tied up in a piece of linen: sacchari albi, aluminis āā ʒ vi, calomelanos ʒ iv, antimonii sulphurati ʒ j. Simmer down to 12 quarts; toward the close of the simmering add: seminum anisi contus., seminum fœniculi contus., āā ℥ ss, foliorum sennæ ℥ iij, radicis glycyrrhizæ concisæ ℥ jss. Press and strain; after standing until cool, decant the clear liquid and bottle 12 quarts. *Weak.*—To the dregs of the strong decoction add: radicis sarsæ concisæ ℥ vj, aquæ fontanæ libras lxxii. Simmer down to 12 quarts, and toward the close of the simmering add: Corticis fructûs citri contusi, cardamomum minorum contus., radicis glycyrrhizæ concisæ, āā ℥ iij. Squeeze and strain, and after standing until cool, decant the clear liquid and bottle 12 quarts. One bottle of the stronger decoction is to be taken warm before twelve o'clock in the day, and one bottle of the weaker decoction cold between twelve o'clock and bedtime. It has been suggested that the mercurial and antimonial salts contained in the linen bag are useless, as undergoing no solution in the liquid, but Wilson fancied that the remedy answered better when prepared in accordance with the old formula than in a mutilated form. The treatment should be commenced with an active purge of calomel (gr. 4) and colocynth (gr. 8) in two pills; if the action of

the bowels be sluggish, the purgative should be repeated in the evening of the fourth day (Wilson).

Alfred Cooper and Bouchardt say hydrag. bisulph. rub. is the ingredient instead of antimonii sulphurati, and Cooper gives the following directions: "The patient is kept in a room at 80° F. The diet consists of: Breakfast—boiled egg or bacon, tea (no sugar or spices); Lunch—butcher's meat and vegetables, no fruit; Dinner—soup, fish, poultry. The evening before the treatment one or two of the pills are taken, and for the next four days at 9 A. M., 10 A. M., 11 A. M., and 12 noon, half a pint of the strong decoction drunk very hot, and 3 P. M., 5 P. M., and 6 P. M., half a pint of the weak decoction cold. The patient is kept in bed except for one hour every evening. On the fifth day the patient is allowed to get up, he may have a hot bath and dress, and is allowed, if he asks for it, a little brandy or whisky and soda. In the evening, one or two pills are again administered, the patient starting the decoctions the next day as before. So the treatment goes on until the fifteenth day, when it is discontinued."

He states that it succeeds in many cases in which the ordinary treatment has failed. Ulcers which were spreading in spite of ordinary syphilitic treatment heal up under "Zittmann." Also in chronic syphilis affecting the nervous system.

27*a*. **Van Swieten's Spiritus Anti-venereus.**—Corrosive sublimate ʒ ss, spirit of wine ℥ lxxx. Dissolve.

The French formula is: Perchlorid of mercury 1 gram, alcohol (ninety per cent) 100 grams, distilled water 900 grams. A tablespoonful contains 16 milligrams of the salt.

Miscellaneous Mixtures.

28. Oil of turpentine *m*x to *m*xxx, oil of lemon *m*ij, mucilage of acacia ℥ ss, water ℥ ss. Take immediately after meals, three times a day. The last dose not to be later than 6 P. M., and during the treatment at least a quart of barley-water to be drunk in the course of twenty-four hours. For psoriasis, eczema, and hyperemia of the skin (Author).

29. Antimonial wine *m*iij to *m*v, water ℥ j. For eczema (Malcolm Morris).

30. Tincture of guaiacum *m*xl, tincture of aconite *m*ij, camphor water ℥ ss. For chronic skin diseases, especially with rheumatic taint (Tilbury Fox).

31. Tincture of iodid *m*iij to *m*v, in water after meals. For lupus vulgaris (Liveing). He also gives it combined with an equal quantity of Fowler's solution.

32. Tincture of cannabis indica *m*x to *m*xxx, compound powder of tragacanth gr. 10, water ℥ j. For pruritus and prurigo (Bulkley).

FOR SUBCUTANEOUS OR INTRAMUSCULAR INJECTIONS.

Mercurial Intramuscular Injections.

1. *Lang's Gray Oil* (Oleum cinereum).—Mercury and lanolin, of each 3 parts, olive oil 4 parts = thirty per cent. During the first week the

patient receives injections in two places in the back of .1 to .2 c.c. After from two to three days the same quantity is injected in the same place, and every week .1 c.c. is injected throughout the whole course. A fifty per cent. oil is also used, the dose being .05 c.c.

2. *J. Althaus' Cream.*—One part mercury is to be incorporated into 4 parts each of lanolin and two per cent. carbolized olive oil.

3. *Yellow Oxid of Mercury* (Watraszewski's).—Yellow oxid of mercury 1 gram, gum arabic $\frac{1}{2}$ of a gram, distilled water 30 grams. Shake and inject a Pravaz syringeful deep into the tissues once a week, *i. e.*, 4 centigrams, or $\frac{2}{3}$ of a grain.

4. *Perchlorid of Mercury* (Astley Bloxam).—Perchlorid of mercury 6 grains, distilled water ʒ j. Inject 20 drops ($\frac{1}{4}$ of a grain) once a week deep into the gluteal muscles. Very good, but very painful.

5. *Glutin-peptone-sublimate* contains twenty-five per cent. of mercuric chlorid. It is prepared in a one per cent. solution, and a Pravaz syringeful (= 1 centigram, or $\frac{1}{6}$ of a grain) is injected.

6. *Succinimid of Mercury.*—One per cent. solution. Dose, a Pravaz syringeful, or $\frac{1}{6}$ to $\frac{1}{3}$ of a grain (Vollert). Selenew thinks it is equally efficacious with the yellow oxid, and superior to the alanate, the salicylate, or the gray oil. Calomel injections are more dangerous.

7. *Schwimmer's Formula for Hypodermic Injection in Syphilis.*—Sozoiodolate of mercury gr. 12, iodid of potassium gr. 25, distilled water ʒ ijss. Inject 1 Pravaz syringeful a week, equal to an inunction of 3 v ung. hyd.

8. The formula I use is sozoiodolate of mercury 3 grains, and iodid of soda 6 grains, rubbed up and dissolved in 4 drams of boiled distilled water. Twenty minims = $\frac{1}{4}$ grain is injected into the buttock once a week. This salt is much less painful than the perchlorid.

9. *Salicylate of Mercury* (Eich).—Hydrarg. salicylatis ʒ i, paraffin oil ʒ ix. Shake well before using, and inject a Pravaz syringeful into the buttocks once a week. Said not to be painful, but Boucy found it too painful to use; and there is one fatal case on record.

10. *Benzoate of Mercury* (Stoukovenkoff).—Benzoate of mercury .30 grams, chlorid of sodium .10 grams, chlorhydrate of cocain .15 grams, distilled water 40 grams. From half to a whole Pravaz syringeful (15 *m.*) is injected daily = 1 centigram of the salt. Thirty to 40 injections for an average case.

11. *Double Hyposulphite of Mercury and Potassium* (Dreser and Camerey).—.25 of a gram is dissolved in 10 grams of distilled water. From $\frac{1}{2}$ to a whole Pravaz syringeful is injected, which is a dose corresponding to $\frac{1}{15}$ to $\frac{1}{8}$ of a grain of corrosive sublimate. The double salt contains 31.4 per cent. of mercury. It is said to be not more painful than a morphia injection.

For Intravenous Injections.

1. *Perchlorid of Mercury. Baccelli's Solution.*—Perchlorid of mercury 1 grain, chlorid of sodium 3 grains, distilled water 1000 grains. Filter and warm slightly before injection. Inject 15 minims, following the directions in the text. Note the objections to the treatment

2. *Cyanid of Mercury* (Chopping).—A one per cent. solution in distilled water. Twenty *m.* is injected daily.

Thiosinamin.

This drug is obtained from the volatile oil of mustard, and is chemically allyl-sulpho-carbamid. It was introduced by Hans Hebra as an injection method for lupus vulgaris, but is not now used for this, but is very valuable for keloids and hypertrophic scars. It occurs in white crystals. The original solution was alcoholic, but this gives much pain, and the following is now used: Thiosinamin 8 grains, glycerin 20 minims, water up to 110 minims. Dissolve with gentle heat. Up to 20 minims in 3 or 4 injections: can be introduced beneath the tumor once or twice a week.

Cacodylate of Sodium.

This organic compound of arsenic, which has been described in the General Section on Therapeutics, may be used in sarcomata and similar serious cases, but unless further experience proves to be less dangerous than it appears likely to be, should not be used for cases in which arsenic is usually suitable. It is sold in sterilized solutions in tubes containing one grain of the salt in 15 minims, which is the dose recommended.

Another similar compound is arrhenal (disodium methyl-arsenate), which is recommended by Gautier, as it has not the unpleasant effects of the cacodylate when administered by the mouth. The hypodermic dose is 5 to 10 centigrams, or ½ to 1½ grains. Squire supplies an injection of ½ grain in 10 minims, as well as ½ grain globules for administration by the mouth.

Coley's Fluid.

The fluid is prepared by growing the Streptococcus Erysipelatis and the Bacillus Prodigiosus in the same flask for a certain number of days. The resulting culture is then sterilized by heat, filtered through sterilized filtering paper, and a small quantity of carbolic acid added, so that the resulting fluid contains 0.5 per cent. of carbolic acid.

The fluid is injected hypodermically with all antiseptic precautions, in the neighborhood of the tumor. It is, however, necessary to use small doses at first, that is, not more than half a minim, as severe fever often follows larger doses.

This fluid has been recommended for malignant tumors. The success, however, has only been very meager, and as far as mycosis fungoides is concerned quite failed in one of my cases.

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